

Supplement

Tspan8-tumor extracellular vesicle-induced endothelial cell and fibroblast remodeling relies on the target cell-selective response

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Table S1

Primers and antibodies

Table S1A

Primers

| | |
|---------------|---|
| IL-1 α | Forward CAGGTCTCCTCATGGCTTTGC Reverse CTTCCGAAAAGAAGGCTGTCC |
| IL-1 β | Forward AAGGCTGGGTGAAGACCCTTA Reverse TGAATGGCCGTTTCTGGAAGT |
| IL-6 | Forward CGGTTAGCACACACTCCTTTG Reverse CTTCGACGTGACAGACGCT |
| TNF α | Forward ACAAACTGGGTAAAGGTGATGG Reverse CAAGTTATCTGTGTCCCCAAAGC |
| VEGF | Forward CTCTCCCCGAAAAGAAACG Reverse CGGAACATCTCGAAGCGTTTA |
| TIMP1 | Forward ATCCACGGCATACTATCAACATC Reverse CAAGGCTCACCATCATCGTAG |
| GAPDH | Forward AGAGGGAAATCGTGCCTGAC Reverse CAATAGTGATGACCTGGCCGT |

Table S1B

Antibodies

| Name | Origin | Supplier |
|-----------------------------------|---------------|------------------------------|
| Adam15 | rabbit | Santa Cruz, HD, G |
| alpha 5 integrin | hamster | Becton Dickinson, HD, G |
| $\alpha\beta 4$ (B5.5) | mouse IgG | ref. 1 |
| Areg | rabbit | Santa Cruz, HD, G |
| beta1 integrin | hamster IgG | Becton Dickinson, HD, G |
| c-jun | mouse | Becton Dickinson, HD, G |
| CCR-2 | rabbit | Cell Signaling, HD, G |
| CCR-7 | rabbit | Cell Signaling, HD, G |
| CD163 | mouse | Cell Signaling, HD, G |
| CD36 | rabbit | Cell Signaling, HD, G |
| CD44 | mouse | Cell Signaling, HD, G |
| CD86 | mouse | Santa Cruz, HD, G |
| Cofilin | mouse | Santa Cruz, HD, G |
| Collagen IV | rabbit | Rockland, Gilbertsville, USA |
| CXCL1 | rabbit | Cell Signaling, HD, G |
| CXCR2 | rabbit | Cell Signaling, HD, G |
| CXCR4 | rabbit | Cell Signaling, HD, G |
| CXCR5 | rabbit | Cell Signaling, HD, G |
| E-cadherin | rabbit | Santa Cruz, HD, G |
| eLF1 | rabbit | Cell Signaling, HD, G |
| Fos | rabbit | Cell Signaling, HD, G |
| Foxo3 | rabbit | Santa Cruz, HD, G |
| HIF1 α | mouse IgG | Becton Dickinson, HD, G |
| JNK | rabbit | Santa Cruz, HD, G |
| Keap | rabbit | Cell Signaling, HD, G |
| MMP-9 | mouse | Dianova, Hamburg, G |
| NF κ B p65 | mouse | Becton Dickinson, HD, G |
| NOX1 | rabbit | Cell Signaling, HD, G |
| NOX4 | rabbit | Cell Signaling, HD, G |
| Nrf2 | mouse | Cell Signaling, HD, G |
| p38 MAPK | rabbit | Cell Signaling, HD, G |
| Paxillin | rabbit | Santa Cruz, HD, G, G |
| pERK1/2 | mouse | Becton Dickinson, HD, G |
| PI3K-p85 | mouse | Santa Cruz, HD, G |
| PKCA | mouse | Becton Dickinson, HD, G |
| PPAR γ | rabbit | Cell Signaling, HD, G |
| RhoB | rabbit | Cell Signaling, HD, G |
| SMAD4 | rabbit | Santa Cruz, HD, G |
| Tspan5 | rabbit | Cell Signaling, HD, G |
| VEGF | goat | Abcam, Cambridge, UK |
| VEGFR2 | rabbit | Abcam, Cambridge, UK |
| Vimentin | rabbit | Santa Cruz, HD, G |
| Vinculin | rabbit | Cell Signaling, HD, G |
| secondary, dye-labeled antibodies | | Dianova, Hamburg, G |

reference 1

Matzku S, Wenzel A, Liu S, Zöller M. Antigenic differences between metastatic and nonmetastatic BSp73 rat tumor variants characterized by monoclonal antibodies. *Cancer Res.* 1989;49:1294-9.

Table S1C

miRNA inhibitors

miR-181a inhibitor: 5'-GTATCGCCTATACGTGTA-3'

miR-146b inhibitor: 5'-GTCACCTCGTCTCCGAGA-3'

negative control inhibitor: 5'-GTGTAACACTATACGCCCA-3'

Table S2

Most abundant RNA in endothelial cells, fibroblasts and AS-Tspan8-TEX

Table S2A

Endothelial cells: 50 most abundant RNA

| GeneSymbol | EC | GeneName |
|--------------|--------|---|
| Actg1 | 258535 | actin, gamma 1 |
| Adm | 104998 | adrenomedullin |
| Anxa1 | 100721 | annexin A1 |
| Anxa2 | 162491 | annexin A2 |
| Atp5g2 | 106464 | ATP synthase, H+ transporting, subunit C2 |
| Bgn | 324982 | Biglycan |
| Cdhr1 | 191901 | cadherin-related family member 1 |
| Ceacam9 | 144429 | carcinoembryonic antigen-related cell adhesion molecule 9 |
| Col1a2 | 146445 | collagen, type I, alpha 2 |
| Ctsd | 113317 | cathepsin D |
| Eef1a1 | 174154 | eukaryotic translation elongation factor 1 alpha 1 |
| Eef1g | 165905 | eukaryotic translation elongation factor 1 gamma |
| Eno1 | 174154 | enolase 1 |
| Fau | 246290 | Finkel-Biskis-Reilly murine sarcoma virus (FBR-MuSV) ubiquit. expressed |
| Fth1 | 305328 | ferritin, heavy polypeptide 1 |
| Ftl | 286863 | ferritin, light polypeptide |
| Gnas | 100721 | GNAS complex locus |
| Hspa8 | 154795 | heat shock protein 8 |
| Ints7 | 160254 | integrator complex subunit 7 |
| Ldha | 155872 | lactate dehydrogenase A |
| Lgals1 | 132902 | lectin, galactoside-binding, soluble, 1 |
| LOC100364138 | 233005 | ferritin light chain 1-like |
| LOC290595 | 100025 | hypothetical gene supported by AF152002 |
| LOC303448 | 162491 | similar to glyceraldehyde-3-phosphate dehydrogenase |
| LOC310926 | 248003 | hypothetical protein LOC310926 |
| LOC687270 | 217401 | similar to glyceraldehyde-3-phosphate dehydrogenase |
| Mapk3 | 100025 | mitogen activated protein kinase 3 |
| Mif | 139509 | macrophage migration inhibitory factor |
| Myl6 | 148489 | myosin, light chain 6, smooth muscle and non-muscle |
| Myl6l | 226633 | myosin, light polypeptide 6, smooth muscle and non-muscle-like |
| Pabpc1 | 120611 | poly(A) binding protein, cytoplasmic 1 |
| Pcolce | 198668 | procollagen C-endopeptidase enhancer |
| Peo1 | 125733 | progressive external ophthalmoplegia 1 |
| Pgam1 | 194579 | phosphoglycerate mutase 1 |
| Pgk1 | 137588 | phosphoglycerate kinase 1 |
| Ppia | 163621 | peptidylprolyl isomerase A (cyclophilin A) |
| RGD1309537 | 104998 | similar to Myosin regulatory light chain 2-A, smooth muscle isoform |
| RGD1559682 | 135694 | similar to peptidylprolyl isomerase A (cyclophilin A) |
| RGD1562953 | 215899 | similar to Rpl7a protein |
| Rps2 | 221969 | ribosomal protein S2 |
| S100a4 | 244589 | S100 calcium-binding protein A4 |
| S100a6 | 343512 | S100 calcium binding protein A6 |
| Sparc | 118129 | secreted protein, acidic, cysteine-rich (osteonectin) |
| Stfa2 | 338783 | stefin A2 |
| Timp2 | 187951 | TIMP metalloproteinase inhibitor 2 |
| Tmsb4x | 117313 | thymosin beta 4, X-linked |
| Tpt1 | 221969 | tumor protein, translationally-controlled 1 |
| Tubb4b | 126607 | tubulin, beta 4B class IVb |
| Ubb | 147464 | ubiquitin B |
| Ubc | 154795 | ubiquitin C |

Table S2B

Lung fibroblasts: 50 most abundant RNA

| Symbol | Fb | GeneName |
|--------------|--------|---|
| Actg1 | 226633 | actin, gamma 1 |
| Anxa1 | 139509 | annexin A1 |
| Anxa2 | 149522 | annexin A2 |
| Atp5g2 | 109457 | ATP synthase, H+ transporting, subunit C2 (subunit 9) |
| Bgn | 345901 | Biglycan |
| Cdhr1 | 106464 | cadherin-related family member 1 |
| Ceacam9 | 194579 | carcinoembryonic antigen-related cell adhesion molecule 9 |
| Col1a2 | 172951 | collagen, type I, alpha 2 |
| Cox4i1 | 99334 | cytochrome c oxidase subunit IV isoform 1 |
| Cox6a1 | 98648 | cytochrome c oxidase, subunit VIa, polypeptide 1 |
| Ctsb | 130167 | cathepsin B |
| Cx3cl1 | 128375 | chemokine (C-X3-C motif) ligand 1 |
| Eef1a1 | 177813 | eukaryotic translation elongation factor 1 alpha 1 |
| Eef1g | 150562 | eukaryotic translation elongation factor 1 gamma |
| Eno1 | 129267 | enolase 1, (alpha) |
| Fau | 265803 | Finkel-Biskis-Reilly murine sarcoma virus (FBR-MuSV) ubiquit. expressed |
| Fth1 | 322737 | ferritin, heavy polypeptide 1 |
| Ftl | 296979 | ferritin, light polypeptide |
| Gnas | 108701 | GNAS complex locus |
| Hspa8 | 156956 | heat shock protein 8 |
| Ifi27 | 110985 | interferon, alpha-inducible protein 27 |
| Ints7 | 152664 | integrator complex subunit 7 |
| Lgals1 | 104998 | lectin, galactoside-binding, soluble, 1 |
| LOC100364138 | 233005 | ferritin light chain 1-like |
| LOC303448 | 124864 | similar to glyceraldehyde-3-phosphate dehydrogenase |
| LOC310926 | 301124 | hypothetical protein LOC310926 |
| LOC687270 | 187951 | similar to glyceraldehyde-3-phosphate dehydrogenase |
| Mapk3 | 113317 | mitogen activated protein kinase 3 |
| Mt2A | 100721 | metallothionein 2A |
| Myl6 | 152664 | myosin, light chain 6, alkali, smooth muscle and non-muscle |
| Myl6l | 218913 | myosin, light polypeptide 6, alkali, smooth muscle and non-muscle-like |
| Pabpc1 | 164759 | poly(A) binding protein, cytoplasmic 1 |
| Pcolce | 198668 | procollagen C-endopeptidase enhancer |
| Peo1 | 175365 | progressive external ophthalmoplegia 1 |
| Ppia | 180295 | peptidylprolyl isomerase A (cyclophilin A) |
| RGD1559682 | 133826 | similar to peptidylprolyl isomerase A (cyclophilin A) |
| RGD1562953 | 184083 | similar to ribosomal protein L7a |
| RGD1564839 | 107204 | similar to ribosomal protein L31 |
| Rps2 | 226633 | ribosomal protein S2 |
| S100a4 | 269514 | S100 calcium-binding protein A4 |
| S100a6 | 269514 | S100 calcium binding protein A6 |
| Sparc | 150562 | secreted protein, acidic, cysteine-rich (osteonectin) |
| Stfa2 | 358099 | stefin A2 |
| Timp2 | 220436 | TIMP metalloproteinase inhibitor 2 |
| Tkt | 97966 | Transketolase |
| Tmsb4x | 127488 | thymosin beta 4, X-linked |
| Tpt1 | 214408 | tumor protein, translationally-controlled 1 |
| Ubb | 127488 | ubiquitin B |
| Ubc | 115698 | ubiquitin C |
| Vim | 110218 | vimentin |

Table S2C

AS-Tspan8-TEX: 50 most abundant RNA

| Symbol | Tspan8-TEX | GeneName |
|--------------|------------|--|
| Actg1 | 242993 | actin, gamma 1 |
| Atp5a1 | 179088 | ATP synthase, H+ transporting, alpha subunit 1 |
| Ceacam9 | 244642 | carcinoembryonic antigen-related cell adhesion molecule 9 |
| Chchd2 | 149580 | coiled-coil-helix-coiled-coil-helix domain containing 2 |
| Cox6a1 | 184088 | cytochrome c oxidase, subunit VIa, polypeptide 1 |
| Cxcl1 | 168855 | chemokine (C-X-C motif) ligand 1 (melanoma growth stimulating activity, alpha) |
| Dbi | 152144 | diazepam binding inhibitor (GABA receptor modulator, acyl-CoA binding protein) |
| Eef1a1 | 174154 | eukaryotic translation elongation factor 1 alpha 1 |
| Eno1 | 240804 | enolase 1, (alpha) |
| Fau | 171760 | Finkel-Biskis-Reilly murine sarcoma virus (FBR-MuSV) ubiquitously expressed |
| Fth1 | 327274 | ferritin, heavy polypeptide 1 |
| Ftl | 304420 | ferritin, light polypeptide |
| Gapdh | 285319 | glyceraldehyde-3-phosphate dehydrogenase |
| Hint1 | 112558 | histidine triad nucleotide binding protein 1 |
| Hnrnpab | 132930 | heterogeneous nuclear ribonucleoprotein A/B |
| Hspa8 | 156624 | heat shock protein 8 |
| Ifi27 | 131987 | interferon, alpha-inducible protein 27 |
| Ints7 | 113341 | integrator complex subunit 7 |
| Lcn2 | 372071 | lipocalin 2 |
| Ldha | 266442 | lactate dehydrogenase A |
| LOC100364138 | 264373 | ferritin light chain 1-like |
| LOC299558 | 119789 | similar to Zinc finger protein 44 (Zinc finger protein KOX7) |
| LOC303448 | 309598 | similar to glyceraldehyde-3-phosphate dehydrogenase |
| LOC310926 | 282221 | hypothetical protein LOC310926 |
| LOC687270 | 321715 | similar to glyceraldehyde-3-phosphate dehydrogenase |
| Mapk3 | 116528 | mitogen activated protein kinase 3 |
| Mif | 265963 | macrophage migration inhibitory factor |
| Myl6 | 140968 | myosin, light chain 6, alkali, smooth muscle and non-muscle |
| Myl6l | 222017 | myosin, light polypeptide 6, alkali, smooth muscle and non-muscle-like |
| Pcolce | 124439 | procollagen C-endopeptidase enhancer |
| Pebp1 | 203646 | phosphatidylethanolamine binding protein 1 |
| Peo1 | 153859 | progressive external ophthalmoplegia 1 |
| Pgam1 | 269590 | phosphoglycerate mutase 1 |
| Pgk1 | 247396 | phosphoglycerate kinase 1 |
| Ppia | 227531 | peptidylprolyl isomerase A (cyclophilin A) |
| RGD1559682 | 259585 | similar to peptidylprolyl isomerase A (cyclophilin A) |
| RGD1562953 | 201461 | similar to ribosomal protein L7a |
| Rps2 | 240423 | ribosomal protein S2 |
| RT1-A1 | 165332 | RT1 class Ia, locus A1 |
| Stfa2 | 377264 | stefin A2 |
| Tkt | 229847 | Transketolase |
| Tmsb10 | 120200 | thymosin, beta 10 |
| Tpi1 | 175369 | triosephosphate isomerase 1 |
| Tpt1 | 118540 | tumor protein, translationally-controlled 1 |
| Tuba1b | 149580 | tubulin, alpha 1B |
| Tubb2a | 120637 | tubulin, beta 2A class Iia |
| Tubb4b | 264735 | tubulin, beta 4B class Ivb |
| Txn1 | 111424 | thioredoxin 1 |
| Ubb | 243045 | ubiquitin B |
| Ubc | 188741 | ubiquitin C |

Table S3

Significant differences in mRNA signal strength between endothelial cells, fibroblasts and AS-Tspan8-TEX

Table S3A

Higher signal strength in endothelial cells than lung fibroblasts

| Symbol | EC | Fb | EC:Fb | GeneName |
|--------------|--------|------|-------|---|
| Agtr1a | 4240 | 331 | 12.82 | angiotensin II receptor, type 1a |
| Aldoc | 23494 | 2435 | 9.65 | aldolase C, fructose-bisphosphate |
| Anpep | 3397 | 478 | 7.11 | alanyl (membrane) aminopeptidase |
| Aqp1 | 2628 | 461 | 5.70 | aquaporin 1 |
| Areg | 2336 | 89 | 26.17 | amphiregulin |
| Asns | 1833 | 78 | 23.43 | asparagine synthetase |
| Camk2n1 | 2210 | 261 | 8.46 | calcium/calmodulin-dependent protein kinase II inhibitor 1 |
| Cd248 | 8841 | 108 | 82.14 | CD248 molecule, endosialin |
| Cda | 1885 | 186 | 10.13 | cytidine deaminase |
| Col14a1 | 6937 | 484 | 14.32 | collagen, type XIV, alpha 1 |
| Crabp1 | 4545 | 83 | 54.57 | cellular retinoic acid binding protein 1 |
| Ctla2a | 1113 | 138 | 8.06 | cytotoxic T lymphocyte-associated protein 2 alpha |
| Cyp3a9 | 3327 | 572 | 5.82 | cytochrome P450, family 3, subfamily a, polypeptide 9 |
| Dusp5 | 6841 | 989 | 6.92 | dual specificity phosphatase 5 |
| Egr1 | 18179 | 1965 | 9.25 | early growth response 1 |
| Egr2 | 1675 | 197 | 8.51 | early growth response 2 |
| Emp2 | 2241 | 286 | 7.84 | epithelial membrane protein 2 |
| Fabp5 | 4738 | 104 | 45.57 | fatty acid binding protein 5, epidermal |
| Fam26e | 1361 | 241 | 5.66 | family with sequence similarity 26, member E |
| Fos | 7858 | 91 | 86.82 | FBJ osteosarcoma oncogene |
| Gdf15 | 1585 | 236 | 6.73 | growth differentiation factor 15 |
| Gprc5a | 5078 | 910 | 5.58 | G protein-coupled receptor, family C, group 5, member A |
| Grem2 | 1938 | 92 | 20.97 | gremlin 2 |
| Il13ra2 | 2665 | 117 | 22.78 | interleukin 13 receptor, alpha 2 |
| Il17re | 3444 | 164 | 20.97 | interleukin 17 receptor E |
| Il1r2 | 5078 | 133 | 38.32 | interleukin 1 receptor, type II |
| Il1rl1 | 16271 | 1418 | 11.47 | interleukin 1 receptor-like 1 |
| Itgb1 | 7033 | 91 | 77.71 | integrin, beta 1 |
| LOC100361389 | 2610 | 252 | 10.34 | hypothetical protein LOC100361389 |
| LOC290595 | 100025 | 3468 | 28.84 | hypothetical gene supported by AF152002 |
| Lrit1 | 1618 | 99 | 16.34 | leucine-rich repeat, immunoglob.-like and transmembr. domains 1 |
| Mfap5 | 26987 | 2684 | 10.06 | microfibrillar associated protein 5 |
| Mgst1 | 2610 | 331 | 7.89 | microsomal glutathione S-transferase 1 |
| Msln | 42055 | 4738 | 8.88 | mesothelin |
| Nppb | 1323 | 80 | 16.45 | natriuretic peptide B |
| Nr4a1 | 10960 | 657 | 16.68 | nuclear receptor subfamily 4, group A, member 1 |
| Nxph3 | 1629 | 111 | 14.72 | neurexophilin 3 |
| Pard3 | 3281 | 92 | 35.51 | par-3 (partitioning defective 3) homolog |
| Pla2g2a | 8780 | 719 | 12.21 | phospholipase A2, group IIA |
| Ptgs1 | 7181 | 425 | 16.91 | prostaglandin-endoperoxide synthase 1 |
| Rgs2 | 2180 | 388 | 5.62 | regulator of G-protein signaling 2 |
| Sepp1 | 1710 | 118 | 14.52 | selenoprotein P, plasma, 1 |
| Slc22a18 | 3350 | 217 | 15.45 | solute carrier family 22, member 18 |
| Slc6a4 | 1872 | 120 | 15.56 | solute carrier family 6 (neurotransmitter transp., serotonin), memb.4 |
| Slpi | 1287 | 125 | 10.27 | secretory leukocyte peptidase inhibitor |
| Sncg | 6383 | 152 | 41.93 | synuclein, gamma (breast cancer-specific protein 1) |
| Steap4 | 1898 | 263 | 7.21 | STEAP family member 4 |
| Sulf2 | 1531 | 141 | 10.85 | sulfatase 2 |
| Thbs2 | 7804 | 519 | 15.03 | thrombospondin 2 |
| Tmem45a | 3984 | 739 | 5.39 | transmembrane protein 45A |

Table S3B

Higher signal strength in lung fibroblasts than endothelial cells

| Symbol | EC | Fb | Fb:EC | GeneName |
|--------------|-------|--------|-------|--|
| Acta2 | 1795 | 11747 | 6.54 | smooth muscle alpha-actin |
| Adarb1 | 309 | 1771 | 5.74 | adenosine deaminase, RNA-specific, B1 |
| Aoc3 | 904 | 5634 | 6.23 | amine oxidase, copper containing 3 (vascular adhesion protein 1) |
| Aox1 | 2452 | 9742 | 3.97 | aldehyde oxidase 1 |
| C1ql3 | 258 | 1479 | 5.74 | complement component 1, q subcomponent-like 3 |
| C1qtnf7 | 396 | 1585 | 4.00 | C1q and tumor necrosis factor related protein 7 |
| Ccdc37 | 3083 | 15608 | 5.06 | coiled-coil domain containing 37 |
| Ccl19 | 326 | 1771 | 5.43 | chemokine (C-C motif) ligand 19 |
| Cd24 | 278 | 1479 | 5.31 | CD24 molecule |
| Cdc42bpg | 385 | 1510 | 3.92 | CDC42 binding protein kinase gamma (DMPK-like) |
| Ces1a | 1226 | 7804 | 6.36 | carboxylesterase 1A |
| Ces1d | 191 | 3875 | 20.25 | carboxylesterase 1D |
| Cfh | 284 | 1641 | 5.78 | complement factor H |
| Clk1 | 2957 | 10514 | 3.56 | CDC-like kinase 1 |
| Cx3cl1 | 17805 | 128375 | 7.21 | chemokine (C-X3-C motif) ligand 1 |
| Dock8 | 211 | 1046 | 4.96 | dedicator of cytokinesis 8 |
| Enpep | 491 | 4939 | 10.06 | glutamyl aminopeptidase |
| Fam46a | 1820 | 6383 | 3.51 | family with sequence similarity 46, member A |
| Fhl1 | 3281 | 19893 | 6.06 | four and a half LIM domains 1 |
| Fxyd1 | 241 | 1885 | 7.84 | FXYP domain-containing ion transport regulator 1 |
| Gna14 | 734 | 3259 | 4.44 | guanine nucleotide binding protein, alpha 14 |
| Gpm6b | 820 | 3040 | 3.71 | glycoprotein m6b |
| Lcat | 309 | 1209 | 3.92 | lecithin cholesterol acyltransferase |
| LOC100363229 | 1448 | 4939 | 3.41 | hypothetical protein LOC100363229 |
| LOC100364218 | 2336 | 10735 | 4.59 | hypothetical protein LOC100364218 |
| LOC100365120 | 2165 | 9476 | 4.38 | hypothetical protein LOC100365120 |
| LOC100366054 | 2539 | 11191 | 4.41 | Da1-10-like |
| LOC499330 | 468 | 1924 | 4.11 | similar to Nicotinamide riboside kinase 1 |
| LOC500846 | 1399 | 4673 | 3.34 | hypothetical protein LOC500846 |
| LOC690463 | 501 | 1675 | 3.34 | hypothetical protein LOC690463 |
| Mrvi1 | 396 | 6608 | 16.68 | murine retrovirus integration site 1 homolog |
| Myh1 | 1771 | 7591 | 4.29 | myosin, heavy polypeptide 1, skeletal muscle, adult |
| Myh10 | 855 | 2856 | 3.34 | myosin, heavy chain 10, non-muscle |
| Myh8 | 2020 | 9027 | 4.47 | myosin, heavy chain 8, skeletal muscle |
| Myl9 | 537 | 2272 | 4.23 | myosin, light chain 9, regulatory |
| Nacc2 | 1520 | 5185 | 3.41 | nucleus accumbens assoc.2, BEN and BTB (POZ) domain contain. |
| Nme4 | 613 | 2336 | 3.81 | non-metastatic cells 4, protein expressed in |
| Npff | 317 | 1448 | 4.56 | neuropeptide FF-amide peptide precursor |
| Pcp4l1 | 347 | 2135 | 6.15 | Purkinje cell protein 4-like 1 |
| Pear1 | 329 | 1235 | 3.76 | platelet endothelial aggregation receptor 1 |
| Pik3r1 | 471 | 2210 | 4.69 | phosphoinositide-3-kinase, regulatory subunit 1 (alpha) |
| Ptn | 194 | 1136 | 5.86 | Pleiotrophin |
| Reep6 | 380 | 1399 | 3.68 | receptor accessory protein 6 |
| RGD1359529 | 6165 | 25006 | 4.06 | similar to chromosome 1 open reading frame 63 |
| Sfxn4 | 592 | 2353 | 3.97 | sideroflexin 4 |
| Sirpa | 239 | 2020 | 8.46 | signal-regulatory protein alpha |
| Spint2 | 2336 | 8599 | 3.68 | serine peptidase inhibitor, Kunitz type, 2 |
| Tcf7l2 | 760 | 3040 | 4.00 | transcription factor 7-like 2 (T-cell specific, HMG-box) |
| Tm4sf1 | 6747 | 38166 | 5.66 | transmembrane 4 L six family member 1 |
| Tnfrsf11b | 564 | 2487 | 4.41 | tumor necrosis factor receptor superfamily, member 11b |

Table S3C

Higher mRNA signal strength in AS-Tspan8-TEX than endothelial cells

| Symbol | EC | Tspan8- TEX | Tspan8- TEX:EC ^a | GeneName |
|----------|------|----------------|--------------------------------|--|
| A2m | 69 | 35879 | 519.46 | alpha-2-macroglobulin |
| Adamts9 | 82 | 10663 | 129.81 | a disintegrin-like and metalloprotease with thrombospondin type 1 motif, 9 |
| Adora1 | 91 | 1098 | 12.13 | adenosine A1 receptor |
| Afp | 70 | 2576 | 36.78 | alpha-fetoprotein |
| Akr7a3 | 84 | 1700 | 20.13 | aldo-keto reductase family 7, member A3 (aflatoxin aldehyde reductase) |
| Aldh1a1 | 78 | 13034 | 166.58 | aldehyde dehydrogenase 1 family, member A1 |
| Anxa3 | 91 | 2750 | 30.38 | annexin A3 |
| Apoc4 | 92 | 2684 | 29.04 | apolipoprotein C-IV |
| Apoe | 228 | 23334 | 102.55 | apolipoprotein E |
| Arg2 | 91 | 5009 | 55.34 | arginase type II |
| Arhgap8 | 307 | 3605 | 11.76 | Rho GTPase activating protein 8 |
| Atf3 | 478 | 10300 | 21.56 | activating transcription factor 3 |
| Atp6v0a4 | 95 | 1177 | 12.39 | ATPase, H+ transporting, lysosomal V0 subunit A4 |
| B3gnt7 | 98 | 1500 | 15.35 | UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 7 |
| Bambi | 223 | 3304 | 14.83 | BMP and activin membrane-bound inhibitor |
| Bex1 | 88 | 9418 | 106.98 | brain expressed, X-linked 1 |
| Bpifb6 | 66 | 1052 | 16.00 | BPI fold containing family B, member 6 |
| C2cd4d | 68 | 4624 | 67.88 | C2 calcium-dependent domain containing 4D |
| C3 | 4482 | 91461 | 20.41 | complement component 3 |
| Cacna1h | 90 | 4013 | 44.65 | calcium channel, voltage-dependent, T type, alpha 1H subunit |
| Ccdc11 | 77 | 2403 | 31.35 | coiled-coil domain containing 11 |
| Ccl20 | 148 | 9253 | 62.50 | chemokine (C-C motif) ligand 20 |
| Cd1d1 | 239 | 2558 | 10.71 | CD1d1 molecule |
| Cd59 | 194 | 2345 | 12.09 | CD59 molecule, complement regulatory protein |
| Cd99l2 | 80 | 3094 | 38.46 | CD99 molecule-like 2 |
| Cecr5 | 383 | 5096 | 13.32 | cat eye syndrome chromosome region, candidate 5 homolog |
| Cfi | 134 | 23171 | 172.45 | complement factor I |
| Chchd10 | 242 | 31253 | 129.04 | coiled-coil-helix-coiled-coil-helix domain containing 10 |
| Chdh | 94 | 11192 | 118.61 | choline dehydrogenase |
| Cldn2 | 69 | 4612 | 66.78 | claudin 2 |
| Clec10a | 73 | 2372 | 32.71 | C-type lectin domain family 10, member A |
| Clec12a | 181 | 2656 | 14.67 | C-type lectin domain family 12, member A |
| Cmb1 | 78 | 1747 | 22.32 | carboxymethylenebutenolidase homolog |
| Cpz | 484 | 17880 | 36.91 | carboxypeptidase Z |
| Crabp2 | 458 | 9378 | 20.46 | cellular retinoic acid binding protein 2 |
| Crff1 | 207 | 4940 | 23.92 | cytokine receptor-like factor 1 |
| Cryba4 | 78 | 2369 | 30.49 | crystallin, beta A4 |
| Csrnp3 | 79 | 3819 | 48.13 | cysteine-serine-rich nuclear protein 3 |
| Csrp2 | 1652 | 66953 | 40.53 | cysteine and glycine-rich protein 2 |
| Ctsc | 100 | 5349 | 53.63 | cathepsin C |
| Cxcl2 | 108 | 3327 | 30.70 | chemokine (C-X-C motif) ligand 2 |
| Dclk2 | 86 | 1311 | 15.20 | doublecortin-like kinase 2 |
| Ddit4l | 150 | 2173 | 14.47 | DNA-damage-inducible transcript 4-like |
| Defa10 | 115 | 1205 | 10.45 | defensin alpha 10 |
| Defa7 | 181 | 4452 | 24.59 | defensin alpha 7 |
| Dhh | 72 | 1140 | 15.84 | desert hedgehog |
| Efhc2 | 81 | 2419 | 29.86 | EF-hand domain (C-terminal) containing 2 |
| Egln3 | 362 | 5914 | 16.34 | EGL nine homolog 3 |
| Eid2 | 80 | 2329 | 28.95 | EP300 interacting inhibitor of differentiation 2 |
| Elf3 | 160 | 1614 | 10.10 | E74-like factor 3 |
| Emid1 | 78 | 1181 | 15.09 | EMI domain containing 1 |
| Enpp2 | 78 | 3959 | 50.59 | ectonucleotide pyrophosphatase/phosphodiesterase 2 |
| Enpp4 | 180 | 1892 | 10.52 | ectonucleotide pyrophosphatase/phosphodiesterase 4 |
| Entpd2 | 99 | 3493 | 35.27 | ectonucleoside triphosphate diphosphohydrolase 2 |
| Epha4 | 129 | 1324 | 10.27 | Eph receptor A4 |
| Eps8l2 | 105 | 1231 | 11.68 | EPS8-like 2 |
| Etnk2 | 98 | 2172 | 22.09 | ethanolamine kinase 2 |
| F5 | 77 | 4186 | 54.62 | coagulation factor V (proaccelerin, labile factor) |

Table S3C continued

| Symbol | EC | Tspan8- TEX | Tspan8- TEX:EC ^a | GeneName |
|--------------|------|----------------|--------------------------------|---|
| Fabp12 | 62 | 1777 | 28.74 | fatty acid binding protein 12 |
| Fndc1 | 119 | 3837 | 32.35 | fibronectin type III domain containing 1 |
| Gadd45g | 1585 | 31108 | 19.63 | growth arrest and DNA-damage-inducible, gamma |
| Gch1 | 197 | 8482 | 43.12 | GTP cyclohydrolase 1 |
| Gckr | 108 | 1172 | 10.89 | glucokinase (hexokinase 4) regulator |
| Gdf15 | 1585 | 33931 | 21.41 | growth differentiation factor 15 |
| Gli1 | 84 | 1380 | 16.45 | GLI family zinc finger 1 |
| Glod5 | 152 | 13682 | 89.89 | glyoxalase domain containing 5 |
| Gprc5c | 101 | 2020 | 19.98 | G protein-coupled receptor, family C, group 5, member C |
| Gramd1b | 523 | 6897 | 13.19 | GRAM domain containing 1B |
| Gstt1 | 182 | 3051 | 16.74 | glutathione S-transferase theta 1 |
| Hap1 | 143 | 1931 | 13.50 | huntingtin-associated protein 1 |
| Hist1h2an | 229 | 2423 | 10.58 | histone cluster 1, H2an |
| Hist2h3c | 1201 | 13639 | 11.36 | histone cluster 2, H3c |
| Hopx | 530 | 9509 | 17.94 | HOP homeobox |
| Hoxb13 | 92 | 1410 | 15.36 | homeo box B13 |
| Hoxd9 | 73 | 1855 | 25.41 | homeo box D9 |
| Hpx | 115 | 4197 | 36.63 | Hemopexin |
| Htra3 | 93 | 1513 | 16.26 | HtrA serine peptidase 3 |
| Id2 | 372 | 16103 | 43.26 | inhibitor of DNA binding 2 |
| Igf2 | 247 | 4923 | 19.91 | insulin-like growth factor 2 |
| Igfbp2 | 77 | 1049 | 13.60 | insulin-like growth factor binding protein 2 |
| Igfbp5 | 88 | 3579 | 40.66 | insulin-like growth factor binding protein 5 |
| Il17rb | 82 | 1073 | 13.06 | interleukin 17 receptor B |
| Il6 | 357 | 5673 | 15.89 | interleukin 6 |
| Isg15 | 1541 | 17381 | 11.28 | ISG15 ubiquitin-like modifier |
| Itga8 | 292 | 3104 | 10.63 | integrin, alpha 8 |
| Itm2a | 159 | 2980 | 18.78 | integral membrane protein 2A |
| Itpka | 170 | 2495 | 14.67 | inositol-trisphosphate 3-kinase A |
| Klhdc8a | 71 | 7835 | 110.33 | kelch domain containing 8A |
| Krt19 | 74 | 12164 | 165.46 | keratin 19 |
| Lcn2 | 4939 | 372071 | 75.33 | lipocalin 2 |
| Lgi3 | 87 | 1846 | 21.27 | leucine-rich repeat LGI family, member 3 |
| LOC100359930 | 512 | 12595 | 24.60 | Cyp2s1 protein-like |
| LOC100364559 | 84 | 3679 | 43.56 | gene model 691, (NCBI)-like |
| LOC100364854 | 74 | 1253 | 16.93 | similar to RIKEN cDNA A430107P09 gene-like |
| LOC498829 | 402 | 7779 | 19.37 | Ab2-143 |
| LOC678766 | 148 | 26744 | 180.64 | similar to ras homolog gene family, member U |
| LOC679126 | 236 | 3692 | 15.67 | similar to SMAD-interacting zinc finger protein 2 |
| LOC689756 | 201 | 2091 | 10.41 | hypothetical protein LOC689756 |
| LOC691293 | 103 | 1369 | 13.35 | similar to reproductive homeobox on chromosome X, 7 |
| Lphn1 | 592 | 7119 | 12.02 | latrophilin 1 |
| Lypd2 | 644 | 24664 | 38.32 | Ly6/Plaur domain containing 2 |
| Mark1 | 68 | 2378 | 35.15 | MAP/microtubule affinity-regulating kinase 1 |
| Mat1a | 79 | 1443 | 18.32 | methionine adenosyltransferase I, alpha |
| Mcam | 83 | 3226 | 38.74 | melanoma cell adhesion molecule |
| Mfsd6 | 452 | 10121 | 22.39 | major facilitator superfamily domain containing 6 |
| Mgst1 | 2610 | 35632 | 13.65 | microsomal glutathione S-transferase 1 |
| Mmd2 | 70 | 1142 | 16.42 | monocyte to macrophage differentiation-associated 2 |
| Mrap | 84 | 12246 | 146.02 | melanocortin 2 receptor accessory protein |
| Myh3 | 125 | 3320 | 26.48 | myosin, heavy chain 3, skeletal muscle, embryonic |
| Npl | 71 | 1168 | 16.57 | N-acetylneuraminase pyruvate lyase |
| Npr1 | 169 | 2233 | 13.22 | natriuretic peptide rec.A/guanylate cyclase A (atrionatriuretic peptide receptor A) |
| Nr0b2 | 80 | 1231 | 15.41 | nuclear receptor subfamily 0, group B, member 2 |
| Nrip3 | 132 | 4012 | 30.49 | nuclear receptor interacting protein 3 |
| Nrp1 | 76 | 1329 | 17.46 | neuropilin 1 |
| Nxph1 | 74 | 6544 | 89.02 | neurexophilin 1 |
| Obsl1 | 193 | 1927 | 10.00 | obscurin-like 1 |
| Olfml2a | 95 | 6430 | 67.68 | olfactomedin-like 2A |

Table S3C continued

| Symbol | EC | Tspan8- TEX | Tspan8- TEX:EC ^a | GeneName |
|------------|------|----------------|--------------------------------|---|
| Osgin1 | 296 | 3327 | 11.24 | oxidative stress induced growth inhibitor 1 |
| P2ry6 | 252 | 3194 | 12.65 | pyrimidinergic receptor P2Y, G-protein coupled, 6 |
| Pcbd1 | 181 | 3517 | 19.43 | pterin-4 α -carbinolamine dehydrat./dimeriz. cofactor of hepatoc.nuclear factor1 α |
| Pcsk9 | 101 | 8055 | 79.66 | proprotein convertase subtilisin/kexin type 9 |
| Pde9a | 69 | 1456 | 21.22 | phosphodiesterase 9A |
| Pdpm | 194 | 35861 | 184.84 | Podoplanin |
| Pitx1 | 505 | 19860 | 39.33 | paired-like homeodomain 1 |
| Plagl1 | 75 | 3398 | 45.26 | pleiomorphic adenoma gene-like 1 |
| Plat | 488 | 6563 | 13.45 | plasminogen activator, tissue |
| Plch1 | 98 | 1557 | 15.83 | phospholipase C, eta 1 |
| Plekhb1 | 101 | 1777 | 17.57 | pleckstrin homology domain containing, family B (evectins) member 1 |
| Plxnd1 | 218 | 5331 | 24.43 | plexin D1 |
| Pnkd | 209 | 9982 | 47.67 | paroxysmal nonkinesinogenic dyskinesia |
| Podxl | 84 | 7012 | 83.04 | podocalyxin-like |
| Prkar1b | 383 | 4722 | 12.34 | protein kinase, cAMP dependent regulatory, type I, beta |
| Prkch | 138 | 3051 | 22.09 | protein kinase C, eta |
| Prtg | 76 | 1310 | 17.33 | Protogenin |
| Ptges | 170 | 2241 | 13.18 | prostaglandin E synthase |
| Ptn | 194 | 12247 | 63.12 | Pleiotrophin |
| Qrich2 | 97 | 1958 | 20.18 | glutamine rich 2 |
| Rac2 | 72 | 5616 | 78.53 | ras-rel. C3 botulinum toxin substrate 2 (rho fam., small GTP bind. protein Rac2) |
| Rap2ip | 231 | 4436 | 19.23 | Rap2 interacting protein |
| Raph1 | 117 | 1759 | 15.03 | Ras association (RalGDS/AF-6) and pleckstrin homology domains 1 |
| Rbp4 | 79 | 2329 | 29.36 | retinol binding protein 4, plasma |
| Rbpms | 66 | 1193 | 18.01 | RNA binding protein with multiple splicing |
| Rerg | 82 | 2436 | 29.65 | RAS-like, estrogen-regulated, growth-inhibitor |
| RGD1304580 | 76 | 1399 | 18.51 | similar to Hypothetical protein MGC38513 |
| RGD1308305 | 82 | 1464 | 17.82 | similar to RIKEN cDNA 5430400H23 |
| RGD1309676 | 139 | 4469 | 32.13 | similar to RIKEN cDNA 5730469M10 |
| RGD1560394 | 97 | 5753 | 59.31 | RGD1560394 |
| RGD1561113 | 434 | 7063 | 16.29 | similar to Hypothetical UPF0184 protein C9orf16 homolog |
| RGD1564380 | 67 | 12247 | 183.56 | similar to BC049730 protein |
| RGD1565166 | 102 | 2233 | 21.93 | similar to MGC45438 protein |
| Rgn | 71 | 1537 | 21.64 | regucalcin (senescence marker protein-30) |
| Rhbdl2 | 76 | 2253 | 29.81 | rhomboid, veinlet-like 2 |
| Ril | 1808 | 23508 | 13.00 | reversion induced LIM gene |
| Rln1 | 74 | 4991 | 67.43 | relaxin 1 |
| Ropn1l | 108 | 1244 | 11.47 | rhophilin associated tail protein 1-like |
| Rps6ka1 | 120 | 5293 | 44.02 | ribosomal protein S6 kinase polypeptide 1 |
| Scarb1 | 734 | 14664 | 19.97 | scavenger receptor class B, member 1 |
| Scd1 | 443 | 12161 | 27.47 | stearoyl-Coenzyme A desaturase 1 |
| Scgb1c1 | 145 | 1620 | 11.18 | secretoglobin, family 1C, member 1 |
| Sec14l2 | 523 | 5279 | 10.10 | SEC14-like 2 |
| Selp | 272 | 3330 | 12.22 | selectin P |
| Serinc5 | 101 | 2427 | 24.00 | serine incorporator 5 |
| Slc29a4 | 187 | 57292 | 305.72 | solute carrier family 29 (nucleoside transporters), member 4 |
| Slc2a5 | 195 | 1980 | 10.14 | solute carrier family 2 (facilitated glucose/fructose transporter), member 5 |
| Slc39a8 | 72 | 3641 | 50.92 | solute carrier family 39 (zinc transporter), member 8 |
| Slc4a3 | 676 | 11273 | 16.69 | solute carrier family 4 (anion exchanger), member 3 |
| Slc7a11 | 498 | 5296 | 10.63 | solute carrier family 7 (anionic amino acid transporter light chain), member 11 |
| Snph | 84 | 1474 | 17.57 | Syntaphilin |
| Sostdc1 | 78 | 69288 | 891.64 | sclerostin domain containing 1 |
| Sox7 | 103 | 1372 | 13.38 | SRY (sex determining region Y)-box 7 |
| Spon1 | 83 | 4524 | 54.32 | spondin 1, extracellular matrix protein |
| Srd5a1 | 165 | 6208 | 37.53 | steroid-5 α -reduct., α polypeptide 1 (3-oxo-5 α -steroid δ 4-dehydrogenase α 1) |
| Stbd1 | 212 | 3281 | 15.46 | starch binding domain 1 |
| Stc1 | 78 | 1892 | 24.18 | stanniocalcin 1 |
| Tead2 | 474 | 5842 | 12.31 | TEA domain family member 2 |
| Tesc | 73 | 2470 | 33.83 | Tescalcin |

Table S3C continued

| Symbol | EC | Tspan8- TEX | Tspan8- TEX:EC ^a | GeneName |
|----------|------|----------------|--------------------------------|--|
| Tfr2 | 78 | 1664 | 21.26 | transferrin receptor 2 |
| Tfrc | 1541 | 54038 | 35.06 | transferrin receptor |
| Timd2 | 282 | 3409 | 12.09 | T-cell immunoglobulin and mucin domain containing 2 |
| Tjp3 | 98 | 3051 | 31.24 | tight junction protein 3 |
| Tmem176a | 69 | 4112 | 59.54 | transmembrane protein 176A |
| Tmem176b | 87 | 22699 | 259.63 | transmembrane protein 176B |
| Tnfrsf21 | 80 | 8570 | 106.53 | tumor necrosis factor receptor superfamily, member 21 |
| Tnnt2 | 290 | 5277 | 18.19 | troponin T type 2 |
| Tppp3 | 100 | 4657 | 46.70 | tubulin polymerization-promoting protein family member 3 |
| Trpv4 | 102 | 2218 | 21.78 | transient receptor potential cation channel, subfamily V, member 4 |
| Tspan12 | 64 | 3849 | 60.56 | tetraspanin 12 |
| Tspan13 | 239 | 2858 | 11.96 | tetraspanin 13 |
| Tspan8 | 81 | 1194 | 14.74 | tetraspanin 8 |
| Tst | 443 | 5067 | 11.45 | thiosulfate sulfurtransferase |
| Tubb2b | 66 | 13465 | 203.23 | tubulin, beta 2B class IIB |
| Tubb3 | 191 | 2071 | 10.82 | tubulin, beta 3 class III |
| Tubg2 | 87 | 2651 | 30.32 | tubulin, gamma 2 |
| Uchl1 | 83 | 18372 | 222.12 | ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase) |
| Vnn1 | 92 | 2135 | 23.10 | vanin 1 |
| Vtcn1 | 93 | 2647 | 28.44 | V-set domain containing T cell activation inhibitor 1 |
| Wif1 | 95 | 1090 | 11.47 | Wnt inhibitory factor 1 |
| Wnt4 | 223 | 2490 | 11.17 | wingless-type MMTV integration site family, member 4 |
| Zwint | 2837 | 33399 | 11.77 | ZW10 interactor |

^a AS-Tspan8-TEX mRNA signal ≥ 10 -fold higher than in EC

Table S3D

Higher mRNA signal strength in AS-Tspan8-TEX than lung fibroblasts

| Symbol | Fb | Tspan8- TEX | Tspan8- TEX:Fb ^b | GeneName |
|----------|------|----------------|--------------------------------|--|
| A2m | 68 | 35879 | 526.71 | alpha-2-macroglobulin |
| Adamts9 | 66 | 10663 | 162.05 | a disintegrin-like and metalloprotease with thrombospondin type 1 motif, 9 |
| Adora1 | 100 | 1098 | 11.01 | adenosine A1 receptor |
| Adora2b | 413 | 8690 | 21.04 | adenosine A2B receptor |
| Afp | 66 | 2576 | 38.88 | alpha-fetoprotein |
| Ak4 | 84 | 2820 | 33.40 | adenylate kinase 4 |
| Akr7a3 | 91 | 1700 | 18.78 | aldo-keto reductase family 7, member A3 (aflatoxin aldehyde reductase) |
| Aldh1a1 | 100 | 13034 | 129.79 | aldehyde dehydrogenase 1 family, member A1 |
| Aldh1l1 | 98 | 2289 | 23.27 | aldehyde dehydrogenase 1 family, member L1 |
| Aldoc | 2435 | 41922 | 17.21 | aldolase C, fructose-bisphosphate |
| Anxa3 | 239 | 2750 | 11.51 | annexin A3 |
| Apoc4 | 96 | 2684 | 27.86 | apolipoprotein C-IV |
| Apoe | 391 | 23334 | 59.72 | apolipoprotein E |
| Areg | 89 | 1314 | 14.72 | Amphiregulin |
| Arg2 | 91 | 5009 | 55.34 | arginase type II |
| Arhgap8 | 102 | 3605 | 35.40 | Rho GTPase activating protein 8 |
| Atf3 | 161 | 10300 | 64.01 | activating transcription factor 3 |
| Atp6v0a4 | 96 | 1177 | 12.30 | ATPase, H ⁺ transporting, lysosomal V0 subunit A4 |
| B3gnt7 | 92 | 1500 | 16.34 | UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 7 |
| Bambi | 145 | 3304 | 22.79 | BMP and activin membrane-bound inhibitor, homolog |
| Bex1 | 79 | 9418 | 119.53 | brain expressed, X-linked 1 |
| Bpifb6 | 63 | 1052 | 16.67 | BPI fold containing family B, member 6 |
| Btg2 | 1152 | 25183 | 21.86 | BTG family, member 2 |
| C2cd4d | 77 | 4624 | 59.92 | C2 calcium-dependent domain containing 4D |
| C3 | 4640 | 91461 | 19.71 | complement component 3 |
| Cacna1h | 83 | 4013 | 48.19 | calcium channel, voltage-dependent, T type, alpha 1H subunit |
| Ccdc11 | 76 | 2403 | 31.79 | coiled-coil domain containing 11 |
| Ccdc91 | 96 | 1161 | 12.05 | coiled-coil domain containing 91 |
| Ccl20 | 82 | 9253 | 113.43 | chemokine (C-C motif) ligand 20 |
| Cd59 | 66 | 2345 | 35.39 | CD59 molecule, complement regulatory protein |
| Cd99l2 | 79 | 3094 | 39.27 | CD99 molecule-like 2 |
| Ceacam10 | 209 | 4909 | 23.45 | carcinoembryonic antigen-related cell adhesion molecule 10 |
| Cfi | 175 | 23171 | 132.52 | complement factor I |
| Chchd10 | 224 | 31253 | 139.27 | coiled-coil-helix-coiled-coil-helix domain containing 10 |
| Chdh | 94 | 11192 | 118.61 | choline dehydrogenase |
| Cldn2 | 72 | 4612 | 64.50 | claudin 2 |
| Clec10a | 70 | 2372 | 33.86 | C-type lectin domain family 10, member A |
| Clec12a | 98 | 2656 | 27.00 | C-type lectin domain family 12, member A |
| Cmb1 | 79 | 1747 | 22.17 | carboxymethylenebutenolidase homolog |
| Col15a1 | 360 | 11585 | 32.22 | collagen, type XV, alpha 1 |
| Cpz | 133 | 17880 | 134.93 | carboxypeptidase Z |
| Crabp2 | 596 | 9378 | 15.73 | cellular retinoic acid binding protein 2 |
| Crif1 | 124 | 4940 | 39.68 | cytokine receptor-like factor 1 |
| Cryba4 | 88 | 2369 | 26.91 | crystallin, beta A4 |
| Csf3 | 282 | 3238 | 11.48 | colony stimulating factor 3 (granulocyte) |
| Csrnp3 | 76 | 3819 | 50.52 | cysteine-serine-rich nuclear protein 3 |
| Csrp2 | 685 | 66953 | 97.74 | cysteine and glycine-rich protein 2 |
| Ctsc | 70 | 5349 | 76.38 | cathepsin C |
| Cxcl2 | 94 | 3327 | 35.51 | chemokine (C-X-C motif) ligand 2 |
| Dclk2 | 105 | 1311 | 12.43 | doublecortin-like kinase 2 |
| Ddit4l | 146 | 2173 | 14.88 | DNA-damage-inducible transcript 4-like |
| Defa10 | 118 | 1205 | 10.23 | defensin alpha 10 |
| Defa7 | 172 | 4452 | 25.82 | defensin alpha 7 |
| Dhh | 72 | 1140 | 15.84 | desert hedgehog |
| Dnajc12 | 84 | 1073 | 12.79 | DnaJ (Hsp40) homolog, subfamily C, member 12 |
| Dusp22 | 111 | 1133 | 10.17 | dual specificity phosphatase 22 |
| Efhc2 | 64 | 2419 | 37.79 | EF-hand domain (C-terminal) containing 2 |
| Egln3 | 370 | 5914 | 16.00 | EGL nine homolog 3 |

Table S3D continued

| Symbol | Fb | Tspan8- TEX | Tspan8- TEX:Fb ^b | GeneName |
|--------------|------|----------------|--------------------------------|---|
| Egr1 | 1965 | 35000 | 17.82 | early growth response 1 |
| Eid2 | 79 | 2329 | 29.56 | EP300 interacting inhibitor of differentiation 2 |
| Emid1 | 75 | 1181 | 15.84 | EMI domain containing 1 |
| Emp2 | 286 | 17562 | 61.40 | epithelial membrane protein 2 |
| Enc1 | 572 | 10775 | 18.84 | ectodermal-neural cortex 1 |
| Enpp2 | 143 | 3959 | 27.68 | ectonucleotide pyrophosphatase/phosphodiesterase 2 |
| Entpd2 | 87 | 3493 | 39.96 | Ectonucleoside triphosphate diphosphohydrolase 2 |
| Entpd6 | 136 | 1777 | 13.04 | Ectonucleoside triphosphate diphosphohydrolase 6 |
| Eps8l2 | 94 | 1231 | 13.04 | EPS8-like 2 |
| Etnk2 | 119 | 2172 | 18.32 | ethanolamine kinase 2 |
| F5 | 84 | 4186 | 49.57 | coagulation factor V (proaccelerin, labile factor) |
| Fabp12 | 66 | 1777 | 26.82 | fatty acid binding protein 12 |
| Fabp5 | 104 | 39375 | 378.73 | fatty acid binding protein 5, epidermal |
| Fam173a | 96 | 1003 | 10.48 | family with sequence similarity 173, member A |
| Fndc1 | 67 | 3837 | 57.51 | fibronectin type III domain containing 1 |
| Fos | 91 | 6274 | 69.31 | FBJ osteosarcoma oncogene |
| Gadd45g | 505 | 31108 | 61.61 | growth arrest and DNA-damage-inducible, gamma |
| Gch1 | 81 | 8482 | 104.70 | GTP cyclohydrolase 1 |
| Gckr | 74 | 1172 | 15.94 | glucokinase (hexokinase 4) regulator |
| Gdf15 | 236 | 33931 | 144.04 | growth differentiation factor 15 |
| Gli1 | 85 | 1380 | 16.22 | GLI family zinc finger 1 |
| Gli2 | 77 | 1056 | 13.69 | GLI family zinc finger 2 |
| Glod5 | 85 | 13682 | 160.90 | glyoxalase domain containing 5 |
| Gngt2 | 98 | 3746 | 38.09 | guanine nucleotide binding protein, gamma transduc.activ.polypept.2 |
| Gprc5c | 93 | 2020 | 21.71 | G protein-coupled receptor, family C, group 5, member C |
| Gramd1b | 523 | 6897 | 13.19 | GRAM domain containing 1B |
| Hap1 | 177 | 1931 | 10.89 | huntingtin-associated protein 1 |
| Hes1 | 133 | 2974 | 22.44 | hairy and enhancer of split 1 |
| Hopx | 592 | 9509 | 16.06 | HOP homeobox |
| Hoxb13 | 74 | 1410 | 19.18 | homeo box B13 |
| Hoxd9 | 64 | 1855 | 29.19 | homeo box D9 |
| Hpx | 177 | 4197 | 23.67 | Hemopexin |
| Hspa4l | 108 | 1380 | 12.82 | heat shock protein 4-like |
| Htra3 | 82 | 1513 | 18.55 | HtrA serine peptidase 3 |
| Id1 | 267 | 2939 | 11.01 | inhibitor of DANN binding 1 |
| Id2 | 622 | 16103 | 25.90 | inhibitor of DANN binding 2 |
| Igf2 | 142 | 4923 | 34.67 | insulin-like growth factor 2 |
| Igfbp2 | 68 | 1049 | 15.51 | insulin-like growth factor binding protein 2 |
| Igfbp5 | 80 | 3579 | 44.49 | insulin-like growth factor binding protein 5 |
| Il17rb | 82 | 1073 | 13.15 | interleukin 17 receptor B |
| Il33 | 108 | 2337 | 21.71 | interleukin 33 |
| Il6 | 135 | 5673 | 41.93 | interleukin 6 |
| Itgb1 | 91 | 5185 | 57.28 | integrin, beta 1 |
| Itn2a | 79 | 2980 | 37.55 | integral membrane protein 2A |
| Itpka | 223 | 2495 | 11.20 | inositol-trisphosphate 3-kinase A |
| Klhdc8a | 71 | 7835 | 111.10 | kelch domain containing 8A |
| Krt19 | 68 | 12164 | 178.57 | keratin 19 |
| Lcn2 | 2937 | 372071 | 126.70 | lipocalin 2 |
| Lgi3 | 86 | 1846 | 21.42 | leucine-rich repeat LGI family, member 3 |
| LOC100359930 | 92 | 12595 | 137.24 | Cyp2s1 protein-like |
| LOC100361389 | 252 | 4156 | 16.46 | hypothetical protein LOC100361389 |
| LOC100364559 | 74 | 3679 | 49.69 | gene model 691, (NCBI)-like |
| LOC100364854 | 68 | 1253 | 18.40 | similar to RIKEN cDNA A430107P09 gene-like |
| LOC498829 | 360 | 7779 | 21.64 | Ab2-143 |
| LOC500959 | 4482 | 59889 | 13.36 | triosephosphate isomerase |
| LOC678766 | 71 | 26744 | 376.62 | similar to ras homolog gene family, member U |
| LOC679126 | 202 | 3692 | 18.25 | similar to SMAD-interacting zinc finger protein 2 |
| LOC689756 | 107 | 2091 | 19.57 | hypothetical protein LOC689756 |
| LOC691293 | 98 | 1369 | 13.92 | similar to reproductive homeobox on chromosome X, 7 |

Table S3D continued

| Symbol | Fb | Tspan8- TEX | Tspan8- TEX:Fb ^b | GeneName |
|------------|------|----------------|--------------------------------|--|
| Lphn1 | 680 | 7119 | 10.47 | latrophilin 1 |
| Ly6e | 106 | 1319 | 12.43 | lymphocyte antigen 6 complex, locus E |
| Lypd2 | 910 | 24664 | 27.10 | Ly6/Plaur domain containing 2 |
| Mark1 | 77 | 2378 | 30.81 | MAP/microtubule affinity-regulating kinase 1 |
| Mat1a | 64 | 1443 | 22.55 | methionine adenosyltransferase I, alpha |
| Mbp | 70 | 1097 | 15.77 | myelin basic protein |
| Mcam | 91 | 3226 | 35.40 | melanoma cell adhesion molecule |
| Mfsd6 | 69 | 10121 | 147.54 | major facilitator superfamily domain containing 6 |
| Mgst1 | 331 | 35632 | 107.70 | microsomal glutathione S-transferase 1 |
| Mmd2 | 73 | 1142 | 15.75 | monocyte to macrophage differentiation-associated 2 |
| Mrap | 84 | 12246 | 146.02 | melanocortin 2 receptor accessory protein |
| Myh3 | 121 | 3320 | 27.42 | myosin, heavy chain 3, skeletal muscle, embryonic |
| Npl | 72 | 1168 | 16.34 | N-acetylneuraminate pyruvate lyase |
| Nppb | 80 | 10056 | 124.99 | natriuretic peptide B |
| Npr1 | 199 | 2233 | 11.20 | natriuretic peptide rec.A/guanylate cyclase A (atriuretic peptide receptor A) |
| Nr0b2 | 83 | 1231 | 14.78 | nuclear receptor subfamily 0, group B, member 2 |
| Nr4a1 | 657 | 7132 | 10.85 | nuclear receptor subfamily 4, group A, member 1 |
| Nrarp | 147 | 1496 | 10.17 | Notch-regulated ankyrin repeat protein |
| Nrip3 | 133 | 4012 | 30.27 | nuclear receptor interacting protein 3 |
| Nrp1 | 79 | 1329 | 16.75 | neuropilin 1 |
| Nxph1 | 70 | 6544 | 94.10 | neurexophilin 1 |
| Olfml2a | 163 | 6430 | 39.41 | olfactomedin-like 2A |
| Osap | 1965 | 21545 | 10.97 | ovary-specific acidic protein |
| Osgin1 | 324 | 3327 | 10.27 | oxidative stress induced growth inhibitor 1 |
| P2ry6 | 142 | 3194 | 22.49 | pyrimidinergic receptor P2Y, G-protein coupled, 6 |
| Pappa | 143 | 1564 | 10.93 | pregnancy-associated plasma protein A |
| Pard3 | 92 | 3225 | 34.90 | par-3 (partitioning defective 3) homolog |
| Pcbd1 | 108 | 3517 | 32.68 | pterin-4 α -carbinolamine dehydrat/dimeriz. cofactor of hepatoc. nuclear factor1 α |
| Pcsk9 | 78 | 8055 | 103.66 | proprotein convertase subtilisin/kexin type 9 |
| Pde9a | 77 | 1456 | 18.86 | phosphodiesterase 9A |
| Pdpm | 86 | 35861 | 415.91 | Podoplanin |
| Pdzrn3 | 600 | 11126 | 18.53 | PDZ domain containing RING finger 3 |
| Pitx1 | 787 | 19860 | 25.24 | paired-like homeodomain 1 |
| Pla2g16 | 1136 | 16103 | 14.17 | phospholipase A2, group XVI |
| Plagl1 | 78 | 3398 | 43.72 | pleiomorphic adenoma gene-like 1 |
| Plch1 | 87 | 1557 | 17.94 | phospholipase C, eta 1 |
| Plxnd1 | 443 | 5331 | 12.04 | plexin D1 |
| Pnkd | 695 | 9982 | 14.37 | paroxysmal nonkinesinogenic dyskinesia |
| Podxl | 74 | 7012 | 95.39 | podocalyxin-like |
| Ppp1r36 | 143 | 1641 | 11.47 | protein phosphatase 1, regulatory subunit 36 |
| Prkar1b | 458 | 4722 | 10.30 | protein kinase, cAMP dependent regulatory, type I, beta |
| Prkch | 134 | 3051 | 22.71 | protein kinase C, eta |
| Prtg | 73 | 1310 | 17.94 | Protogenin |
| Ptges | 105 | 2241 | 21.26 | prostaglandin E synthase |
| Ptn | 1136 | 12247 | 10.78 | Pleiotrophin |
| Qrich2 | 131 | 1958 | 14.98 | glutamine rich 2 |
| Rab15 | 87 | 1094 | 12.60 | RAB15, member RAS oncogene family |
| Rac2 | 74 | 5616 | 75.86 | ras-rel. C3 botulinum toxin substrate 2 (rho family, small GTP binding pr. Rac2) |
| Rap2ip | 77 | 4436 | 57.48 | Rap2 interacting protein |
| Raph1 | 146 | 1759 | 12.04 | Ras association (RalGDS/AF-6) and pleckstrin homology domains 1 |
| Rbp4 | 71 | 2329 | 33.03 | retinol binding protein 4, plasma |
| Rbpms | 68 | 1193 | 17.64 | RNA binding protein with multiple splicing |
| Rerg | 70 | 2436 | 35.02 | RAS-like, estrogen-regulated, growth-inhibitor |
| RGD1304580 | 99 | 1399 | 14.13 | similar to Hypothetical protein MGC38513 |
| RGD1304982 | 180 | 1802 | 10.02 | similar to RIKEN cDNA 2810025M15 |
| RGD1308305 | 101 | 1464 | 14.47 | similar to RIKEN cDNA 5430400H23 |
| RGD1309676 | 156 | 4469 | 28.56 | similar to RIKEN cDNA 5730469M10 |
| RGD1560394 | 74 | 5753 | 78.26 | RGD1560394 |
| RGD1561113 | 465 | 7063 | 15.20 | similar to Hypothetical UPF0184 protein C9orf16 homolog |

Table S3D continued

| Symbol | Fb | Tspan8- TEX | Tspan8- TEX:Fb ^b | GeneName |
|------------|------|----------------|--------------------------------|---|
| RGD1564380 | 67 | 12247 | 183.56 | similar to BC049730 protein |
| RGD1565166 | 68 | 2233 | 32.79 | similar to MGC45438 protein |
| Rgn | 75 | 1537 | 20.47 | regucalcin (senescence marker protein-30) |
| Rgs2 | 388 | 8780 | 22.63 | regulator of G-protein signaling 2 |
| Rhbdl2 | 75 | 2253 | 30.01 | rhomboid, veinlet-like 2 |
| Rhob | 331 | 4692 | 14.18 | ras homolog gene family, member B |
| Ril | 1296 | 23508 | 18.14 | reversion induced LIM gene |
| Rln1 | 74 | 4991 | 67.43 | relaxin 1 |
| Rps6ka1 | 90 | 5293 | 58.89 | ribosomal protein S6 kinase polypeptide 1 |
| Scarb1 | 676 | 14664 | 21.71 | scavenger receptor class B, member 1 |
| Scd1 | 244 | 12161 | 49.87 | stearoyl-Coenzyme A desaturase 1 |
| Scgb1c1 | 141 | 1620 | 11.49 | secretoglobin, family 1C, member 1 |
| Selp | 73 | 3330 | 45.93 | selectin P |
| Serinc5 | 72 | 2427 | 33.71 | serine incorporator 5 |
| Sh3tc1 | 97 | 1319 | 13.60 | SH3 domain and tetratricopeptide repeats 1 |
| Slc29a4 | 120 | 57292 | 476.41 | solute carrier family 29 (nucleoside transporters), member 4 |
| Slc2a5 | 78 | 1980 | 25.48 | solute carrier family 2 (facilitated glucose/fructose transporter), member 5 |
| Slc39a8 | 80 | 3641 | 45.57 | solute carrier family 39 (zinc transporter), member 8 |
| Slc7a11 | 154 | 5296 | 34.31 | solute carrier family 7 (anionic amino acid transporter light chain), member 11 |
| Sipi | 125 | 1885 | 15.03 | secretory leukocyte peptidase inhibitor |
| Slurp1 | 124 | 2106 | 17.03 | secreted Ly6/Plaur domain containing 1 |
| Snph | 77 | 1474 | 19.10 | Syntaphilin |
| Sostdc1 | 82 | 69288 | 843.54 | sclerostin domain containing 1 |
| Sox13 | 81 | 1241 | 15.32 | SRY (sex determining region Y)-box 13 |
| Sox7 | 111 | 1372 | 12.40 | SRY (sex determining region Y)-box 7 |
| Spon1 | 94 | 4524 | 48.28 | spondin 1, extracellular matrix protein |
| Srd5a1 | 148 | 6208 | 41.93 | steroid-5 α -reductase, α polypeptide 1 (3-oxo-5 α -steroid δ 4-dehydrog. α 1) |
| Stau2 | 82 | 1292 | 15.73 | staufen, RNA binding protein, homolog 2 |
| Stc1 | 83 | 1892 | 22.88 | stanniocalcin 1 |
| Tesc | 78 | 2470 | 31.78 | Tescalcin |
| Tfr2 | 77 | 1664 | 21.56 | transferrin receptor 2 |
| Tfr3 | 1885 | 54038 | 28.67 | transferrin receptor |
| Thnsl2 | 84 | 1283 | 15.19 | threonine synthase-like 2 |
| Tjp3 | 108 | 3051 | 28.35 | tight junction protein 3 |
| Tmem176a | 69 | 4112 | 59.95 | Transmembrane protein 176A |
| Tmem176b | 101 | 22699 | 224.46 | Transmembrane protein 176B |
| Tnfrsf21 | 76 | 8570 | 113.38 | tumor necrosis factor receptor superfamily, member 21 |
| Tnnt2 | 201 | 5277 | 26.27 | troponin T type 2 (cardiac) |
| Tppp3 | 117 | 4657 | 39.81 | tubulin polymerization-promoting protein family member 3 |
| Trib3 | 194 | 2639 | 13.60 | tribbles homolog 3 |
| Trpv4 | 99 | 2218 | 22.39 | transient receptor potential cation channel, subfamily V, member 4 |
| Tspan12 | 72 | 3849 | 53.46 | tetraspanin 12 |
| Tspan13 | 111 | 2858 | 25.64 | tetraspanin 13 |
| Tspan8 | 100 | 1194 | 11.89 | tetraspanin 8 |
| Tubb2b | 65 | 13465 | 206.06 | tubulin, beta 2B class IIb |
| Tubb3 | 96 | 2071 | 21.50 | tubulin, beta 3 class III |
| Tubg2 | 76 | 2651 | 35.07 | tubulin, gamma 2 |
| Uchl1 | 78 | 18372 | 234.79 | ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase) |
| Vnn1 | 72 | 2135 | 29.86 | vanin 1 |
| Vtcn1 | 77 | 2647 | 34.30 | V-set domain containing T cell activation inhibitor 1 |
| Wnt4 | 97 | 2490 | 25.66 | wingless-type MMTV integration site family, member 4 |
| Zdhhc2 | 83 | 4000 | 48.36 | zinc finger, DHHC-type containing 2 |
| Zrsr1 | 74 | 1156 | 15.73 | zinc finger (CCCH type), RNA binding motif and serine/arginine rich 1 |
| Zwint | 3259 | 33399 | 10.25 | ZW10 interactor |

^b AS-Tspan8-TEX mRNA signal ≥ 10 -fold higher than in Fb

Table S4

miRNA recovery in cells and TEX

Table S4A

Top miRNA in AS-Tspan8-TEX versus cells

| name | AS-Tspan8- TEX ^a | name | AS-Tspan8- Cells ^a |
|-------------|--------------------------------|-------------|----------------------------------|
| let-7a | 11501 | let-7a | 21915 |
| let-7b | 12220 | let-7b | 15247 |
| let-7c | 16054 | let-7c | 22129 |
| let-7d | 2728 | let-7d | 5248 |
| let-7e | 1445 | let-7e | 3349 |
| let-7f | 4337 | let-7f | 16370 |
| let-7i | 1131 | let-7i | 5160 |
| miR-15b | 4603 | miR-10b | 2105 |
| miR-16 | 2404 | miR-15b | 6033 |
| miR-21 | 4204 | miR-16 | 13231 |
| miR-22 | 3134 | miR-21 | 69126 |
| miR-23a | 3015 | miR-22 | 13479 |
| miR-23b | 1483 | miR-23a | 6814 |
| miR-24 | 1372 | miR-23b | 2605 |
| miR-25 | 1225 | miR-24 | 3756 |
| miR-26a | 1680 | miR-25 | 2107 |
| miR-27a | 749 | miR-26a | 6199 |
| miR-27b | 525 | miR-26b | 3714 |
| miR-29a | 5641 | miR-27a | 4491 |
| miR-29c | 741 | miR-27b | 1961 |
| miR-30c | 1570 | miR-29a | 19376 |
| miR-32 | 1123 | miR-29b | 10663 |
| miR-34a | 1061 | miR-29c | 9494 |
| miR-34c | 947 | miR-30a | 1766 |
| miR-93 | 995 | miR-30b-5p | 1452 |
| miR-99a | 1177 | miR-30c | 3170 |
| miR-99b | 767 | miR-30e | 1527 |
| miR-103 | 912 | miR-34a | 6911 |
| miR-107 | 1148 | miR-34b | 3144 |
| miR-125a-5p | 1626 | miR-34c | 3666 |
| miR-125b-5p | 9329 | miR-93 | 1355 |
| miR-130a | 3464 | miR-96 | 4485 |
| miR-146a | 722 | miR-99a | 3704 |
| miR-182 | 615 | miR-103 | 2196 |
| miR-183 | 586 | miR-106b | 1533 |
| miR-195 | 575 | miR-107 | 2899 |
| miR-196c | 476 | miR-125a-5p | 2292 |
| miR-204 | 645 | miR-125b-5p | 14845 |
| miR-210 | 1590 | miR-130a | 8911 |
| miR-221 | 2219 | miR-142-3p | 2960 |
| miR-324-3p | 747 | miR-146a | 2072 |
| miR-346 | 504 | miR-182 | 1261 |
| miR-466b | 3159 | miR-183 | 1227 |
| miR-466c | 2793 | miR-195 | 4560 |
| miR-494 | 1905 | miR-210 | 2384 |
| miR-497 | 1182 | miR-221 | 2125 |
| miR-652 | 584 | miR-450a | 1357 |
| miR-672 | 805 | miR-494 | 1231 |
| miR-764 | 754 | miR-497 | 4695 |
| miR-1224 | 1324 | miR-1224 | 1628 |

^a red: only in the top 50 in either TEX or cells

Table S4B

Significant differences in the miRNA recovery in AS-Tspan8-TEX versus cells

| name | AS-Tspan8- TEX | AS-Tspan8- cells | AS-Tspan8-TEX : cells |
|-------------|---------------------------|-----------------------------|----------------------------------|
| miR-32 | 1123 | 148 | 7.608 |
| miR-206 | 213 | 32 | 6.727 |
| miR-207 | 414 | 64 | 6.498 |
| miR-298 | 331 | 38 | 8.639 |
| miR-328a | 426 | 101 | 4.240 |
| miR-328b-3p | 357 | 37 | 9.783 |
| miR-346 | 504 | 35 | 14.561 |
| miR-465 | 277 | 23 | 11.894 |
| miR-466b | 3159 | 495 | 6.383 |
| miR-466c | 2793 | 367 | 7.613 |
| miR-466d | 247 | 34 | 7.239 |
| miR-485 | 461 | 69 | 6.641 |
| miR-504 | 314 | 27 | 11.753 |
| miR-511 | 294 | 25 | 11.546 |
| miR-672 | 805 | 109 | 7.419 |
| miR-760-5p | 311 | 108 | 2.879 |
| miR-764 | 754 | 63 | 11.897 |
| miR-1188-3p | 247 | 30 | 8.168 |
| miR-3591 | 216 | 26 | 8.162 |

Table S4B continued

| name | AS-Tspan8- TEX | AS-Tspan8 cells | AS-Tspan8-cells : TEX |
|-------------|---------------------------|----------------------------|----------------------------------|
| let-7e | 1445 | 3349 | 2.317 |
| let-7f | 4337 | 16370 | 3.774 |
| let-7i | 1131 | 5160 | 4.562 |
| miR-10a-5p | 305 | 963 | 3.161 |
| miR-10b | 464 | 2105 | 4.536 |
| miR-16 | 2404 | 13231 | 5.505 |
| miR-21 | 4204 | 69126 | 16.441 |
| miR-22 | 3134 | 13479 | 4.301 |
| miR-23a | 3015 | 6814 | 2.260 |
| miR-24 | 1372 | 3756 | 2.737 |
| miR-26a | 1680 | 6199 | 3.689 |
| miR-26b | 417 | 3714 | 8.904 |
| miR-27a | 749 | 4491 | 5.992 |
| miR-27b | 525 | 1961 | 3.732 |
| miR-29a | 5641 | 19376 | 3.435 |
| miR-29b | 424 | 10663 | 25.167 |
| miR-29c | 741 | 9494 | 12.816 |
| miR-30a | 240 | 1766 | 7.354 |
| miR-30b-5p | 325 | 1452 | 4.466 |
| miR-30c | 1570 | 3170 | 2.019 |
| miR-30e | 148 | 1527 | 10.342 |
| miR-34a | 1061 | 6911 | 6.513 |
| miR-34b | 426 | 3144 | 7.380 |
| miR-34c | 947 | 3666 | 3.871 |
| miR-96 | 364 | 4485 | 12.310 |
| miR-98 | 181 | 901 | 4.973 |
| miR-99a | 1177 | 3704 | 3.148 |
| miR-100 | 324 | 778 | 2.402 |
| miR-101a | 10 | 282 | 28.223 |
| miR-101b | 36 | 879 | 24.174 |
| miR-103 | 912 | 2196 | 2.408 |
| miR-106b | 244 | 1533 | 6.280 |
| miR-107 | 1148 | 2899 | 2.524 |
| miR-128 | 139 | 430 | 3.099 |
| miR-130a | 3464 | 8911 | 2.572 |
| miR-130b | 348 | 917 | 2.639 |
| miR-142-3p | 94 | 2960 | 31.368 |
| miR-146a | 722 | 2072 | 2.871 |
| miR-148b-3p | 125 | 322 | 2.586 |
| miR-151 | 307 | 793 | 2.582 |
| miR-152 | 67 | 461 | 6.856 |
| miR-182 | 615 | 1261 | 2.051 |
| miR-183 | 586 | 1227 | 2.094 |
| miR-185 | 99 | 404 | 4.091 |
| miR-186 | 64 | 261 | 4.092 |
| miR-195 | 575 | 4560 | 7.929 |
| miR-212 | 60 | 257 | 4.292 |
| miR-301a | 18 | 391 | 21.994 |
| miR-322 | 176 | 367 | 2.082 |
| miR-324-5p | 82 | 299 | 3.629 |
| miR-344a-3p | 58 | 279 | 4.817 |
| miR-425 | 164 | 360 | 2.193 |
| miR-450a | 120 | 1357 | 11.294 |
| miR-497 | 1182 | 4695 | 3.971 |
| miR-503 | 36 | 316 | 8.719 |
| miR-542-3p | 28 | 542 | 19.378 |
| miR-542-5p | 172 | 532 | 3.100 |
| miR-872 | 109 | 358 | 3.275 |
| miR-1949 | 288 | 771 | 2.673 |
| miR-3584-5p | 156 | 533 | 3.419 |

Table S4C

The impact of Tspan8 on miRNA recovery in TEX: the top 50 miRNA in AS- and AS-Tspan8-TEX

| name | AS-TEX ^a | name | AS-Tspan8-TEX ^a |
|-------------|---------------------|-------------|----------------------------|
| let-7a | 4914 | let-7a | 11501 |
| let-7b | 5214 | let-7b | 12220 |
| let-7c | 7569 | let-7c | 16054 |
| let-7d | 1213 | let-7d | 2728 |
| let-7e | 421 | let-7e | 1445 |
| let-7f | 3520 | let-7f | 4337 |
| let-7i | 957 | let-7i | 1131 |
| miR-15b | 951 | miR-15b | 4603 |
| miR-16 | 2939 | miR-16 | 2404 |
| miR-21 | 10114 | miR-21 | 4204 |
| miR-22 | 743 | miR-22 | 3134 |
| miR-23a | 2195 | miR-23a | 3015 |
| miR-24 | 514 | miR-23b | 1483 |
| miR-25 | 489 | miR-24 | 1372 |
| miR-26a | 1504 | miR-25 | 1225 |
| miR-26b | 984 | miR-26a | 1680 |
| miR-29a | 2898 | miR-27a | 749 |
| miR-29c | 670 | miR-27b | 525 |
| miR-32 | 473 | miR-29a | 5641 |
| miR-34a | 1057 | miR-29c | 741 |
| miR-34c | 443 | miR-30c | 1570 |
| miR-93 | 465 | miR-32 | 1123 |
| miR-99a | 585 | miR-34a | 1061 |
| miR-107 | 644 | miR-34c | 947 |
| miR-125a-3p | 510 | miR-93 | 995 |
| miR-125b-5p | 4503 | miR-99a | 1177 |
| miR-130a | 774 | miR-99b | 767 |
| miR-134 | 1690 | miR-103 | 912 |
| miR-150 | 1039 | miR-107 | 1148 |
| miR-188 | 4230 | miR-125a-5p | 1626 |
| miR-195 | 1116 | miR-125b-5p | 9329 |
| miR-196c | 500 | miR-130a | 3464 |
| miR-204 | 482 | miR-146a | 722 |
| miR-211 | 4318 | miR-182 | 615 |
| miR-290 | 472 | miR-183 | 586 |
| miR-327 | 8758 | miR-195 | 575 |
| miR-328a | 1313 | miR-196c | 476 |
| miR-451 | 1291 | miR-204 | 645 |
| miR-466b | 842 | miR-210 | 1590 |
| miR-483 | 8872 | miR-221 | 2219 |
| miR-494 | 14649 | miR-324-3p | 747 |
| miR-497 | 1434 | miR-346 | 504 |
| miR-652 | 1723 | miR-466b | 3159 |
| miR-672 | 491 | miR-466c | 2793 |
| miR-874 | 659 | miR-494 | 1905 |
| miR-1224 | 12255 | miR-497 | 1182 |
| miR-3562 | 474 | miR-652 | 584 |
| miR-3564 | 957 | miR-672 | 805 |
| miR-3584-5p | 1829 | miR-764 | 754 |
| miR-3593-3p | 1846 | miR-1224 | 1324 |

^a red: only in the top 50 AS- or AS-Tspan8-TEX

Table S4D

Significant differences in miRNA recovery in ASML- versus ASML-Tspan8kd-TEX

| name | ASML-TEX | ASML-Tspan8kd-TEX | ASML : ASML-Tspan8kd-TEX |
|-------------|----------|-------------------|--------------------------|
| let-7d | 1148 | 377 | 3.042 |
| miR-21 | 11462 | 5333 | 2.149 |
| miR-24-1 | 35571 | 6978 | 5.097 |
| miR-29c | 1118 | 533 | 2.099 |
| miR-30c-1 | 5715 | 1870 | 3.057 |
| miR-103 | 1468 | 637 | 2.304 |
| miR-124 | 2332 | 1163 | 2.005 |
| miR-125a-5p | 9079 | 2077 | 4.371 |
| miR-125b-3p | 29549 | 5541 | 5.333 |
| miR-127 | 1209 | 356 | 3.400 |
| miR-148b-3p | 1924 | 528 | 3.641 |
| miR-214 | 9826 | 3482 | 2.822 |
| miR-291a-5p | 5534 | 627 | 8.833 |
| miR-296 | 33359 | 9235 | 3.612 |
| miR-300-5p | 65490 | 7287 | 8.987 |
| miR-351 | 3707 | 1558 | 2.380 |
| miR-363 | 1692 | 181 | 9.335 |
| miR-382 | 18070 | 3630 | 4.978 |
| miR-423 | 4548 | 1448 | 3.141 |
| miR-494 | 31123 | 14605 | 2.131 |
| miR-500 | 1225 | 548 | 2.235 |
| miR-542-3p | 14225 | 2133 | 6.668 |
| miR-874 | 3096 | 1075 | 2.880 |

| name | ASML-TEX | ASML-Tspan8kd-TEX | ASML-Tspan8kd-TEX : ASML-TEX |
|------------|----------|-------------------|------------------------------|
| miR-7a | 569 | 5188 | 9.122 |
| miR-26b | 7022 | 26350 | 3.752 |
| miR-30b-3p | 2348 | 5402 | 2.300 |
| miR-34a | 650 | 5420 | 8.339 |
| miR-99b | 1359 | 2793 | 2.054 |
| miR-142-5p | 541 | 1490 | 2.757 |
| miR-185 | 655 | 1510 | 2.305 |
| miR-325-5p | 523 | 1617 | 3.095 |
| miR-330 | 285 | 1181 | 4.147 |
| miR-331 | 585 | 4471 | 7.650 |
| miR-409-5p | 375 | 1801 | 4.805 |
| miR-471 | 432 | 1101 | 2.547 |

Table S4E

Top miRNA in AS-Tspan8-cells versus EC

| name | AS-Tspan8-cells ^a | Name | EC ^a |
|-------------|------------------------------|-------------|-----------------|
| let-7a | 21915 | let-7a | 23209 |
| let-7b | 15247 | let-7b | 18017 |
| let-7c | 22129 | let-7c | 22736 |
| let-7d | 5248 | let-7d | 7196 |
| let-7e | 3349 | let-7e | 2981 |
| let-7f | 16370 | let-7f | 18605 |
| let-7i | 5160 | let-7i | 9778 |
| miR-10b | 2105 | miR-10a-5p | 2192 |
| miR-15b | 6033 | miR-15b | 4600 |
| miR-16 | 13231 | miR-16 | 14665 |
| miR-21 | 69126 | miR-19b | 2054 |
| miR-22 | 13479 | miR-21 | 97312 |
| miR-23a | 6814 | miR-22 | 10964 |
| miR-23b | 2605 | miR-23a | 23505 |
| miR-24 | 3756 | miR-23b | 18313 |
| miR-25 | 2107 | miR-24 | 22666 |
| miR-26a | 6199 | miR-26a | 10907 |
| miR-26b | 3714 | miR-26b | 3772 |
| miR-27a | 4491 | miR-27a | 11889 |
| miR-27b | 1961 | miR-27b | 11648 |
| miR-29a | 19376 | miR-29a | 32837 |
| miR-29b | 10663 | miR-29b | 17774 |
| miR-29c | 9494 | miR-29c | 2631 |
| miR-30a | 1766 | miR-30b-5p | 1342 |
| miR-30b-5p | 1452 | miR-30c | 1602 |
| miR-30c | 3170 | miR-31 | 7286 |
| miR-30e | 1527 | miR-34a | 3843 |
| miR-34a | 6911 | miR-34b | 1579 |
| miR-34b | 3144 | miR-34c | 1667 |
| miR-34c | 3666 | miR-100 | 1587 |
| miR-93 | 1355 | miR-101a | 1310 |
| miR-96 | 4485 | miR-103 | 1728 |
| miR-99a | 3704 | miR-106b | 1940 |
| miR-103 | 2196 | miR-107 | 1830 |
| miR-106b | 1533 | miR-125b-5p | 63999 |
| miR-107 | 2899 | miR-129 | 2316 |
| miR-125a-5p | 2292 | miR-130a | 8209 |
| miR-125b-5p | 14845 | miR-140 | 4503 |
| miR-130a | 8911 | miR-143 | 4197 |
| miR-142-3p | 2960 | miR-146a | 2959 |
| miR-146a | 2072 | miR-199a-3p | 20198 |
| miR-182 | 1261 | miR-199a-5p | 6623 |
| miR-183 | 1227 | miR-204 | 1540 |
| miR-195 | 4560 | miR-210 | 1471 |
| miR-210 | 2384 | miR-214 | 4859 |
| miR-221 | 2125 | miR-221 | 7013 |
| miR-450a | 1357 | miR-365 | 1686 |
| miR-494 | 1231 | miR-494 | 1732 |
| miR-497 | 4695 | miR-1224 | 1383 |
| miR-1224 | 1628 | miR-3584-5p | 2519 |

^a red: only in the top 50 AS-Tspan8-cells or EC

Table S5

The impact of Tspan8 on TEX uptake and potential targets

| TEX | Target | TEX uptake | TEX blockade | Target blockade |
|---------------|--------|------------|--------------|-----------------|
| AS-TEX | EC | + | CD9 | CD151 |
| | | | CD49c | CD54 |
| | | | | CD106 |
| | Fb | + | CD9 | CD9 |
| | | | CD49c | CD151 |
| | | | | CD106 |
| AS-Tspan8-TEX | EC | +++ | Tspan8 | CD151 |
| | | | CD49d | CD54 |
| | | | CD49e | CD106 |
| | Fb | ++ | Tspan8 | CD151 |
| | | | CD49c | CD106 |
| | | | | |

Table S6

TEX coculture-induced distinct mRNA recovery in fibroblasts and endothelial cells

Table S6A

AS-Tspan8-TEX coculture-induced Fb mRNA upregulation

| Symbol ^a | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------------------|-------|----------------|---------------------|---|
| Aars | 7383 | 39787 | 5.389 | alanyl-tRNA synthetase |
| Aatf | 1641 | 4421 | 2.694 | apoptosis antagonizing transcription factor |
| Acsl1 | 1607 | 4096 | 2.549 | acyl-CoA synthetase long-chain family member 1 |
| Adora2b | 413 | 1305 | 3.160 | adenosine A2B receptor |
| Adrbk1 | 898 | 2419 | 2.694 | adrenergic, beta, receptor kinase 1 |
| Aen | 6295 | 13777 | 2.189 | apoptosis enhancing nuclease |
| Agfg2 | 2062 | 8306 | 4.028 | ArfGAP with FG repeats 2 |
| Ahi1 | 792 | 1722 | 2.173 | Abelson helper integration site 1 |
| Aig1 | 3641 | 9090 | 2.497 | androgen-induced 1 |
| Akap2 | 338 | 1017 | 3.010 | A kinase (PRKA) anchor protein 2 |
| Akna | 1951 | 8192 | 4.199 | AT-hook transcription factor |
| Alkbh1 | 592 | 1168 | 1.972 | alkB, alkylation repair homolog |
| Alkbh3 | 1097 | 2257 | 2.056 | alkB, alkylation repair homolog 3 |
| Angel1 | 413 | 849 | 2.056 | angel homolog 1 |
| Anks3 | 4182 | 8719 | 2.085 | ankyrin repeat and sterile alpha motif domain containing 3 |
| Anks6 | 929 | 3281 | 3.531 | ankyrin repeat and sterile alpha motif domain containing 6 |
| Antxr2 | 4451 | 9742 | 2.189 | similar to Antxr2 protein |
| Anxa3 | 239 | 1121 | 4.691 | annexin A3 |
| Ap2a2 | 4545 | 9541 | 2.099 | adaptor-related protein complex 2, alpha 2 subunit |
| Apex1 | 4771 | 10297 | 2.158 | APEX nuclease (multifunctional DNA repair enzyme) 1 |
| Arhgef2 | 1698 | 3641 | 2.144 | rho/rac guanine nucleotide exchange factor (GEF) 2 |
| Arl15 | 367 | 760 | 2.071 | ADP-ribosylation factor-like 15 |
| Arl8b | 9410 | 22227 | 2.362 | ADP-ribosylation factor-like 8B |
| Arpc5l | 12161 | 35610 | 2.928 | actin related protein 2/3 complex, subunit 5-like |
| Artn | 1618 | 9608 | 5.938 | artemin |
| Asl | 2937 | 6889 | 2.346 | argininosuccinate lyase |
| Atf3 | 161 | 1872 | 11.632 | activating transcription factor 3 |
| Atf4 | 20882 | 73732 | 3.531 | activating transcription factor 4 (tax-responsive enhancer B67) |
| Atf6 | 1046 | 5518 | 5.278 | activating transcription factor 6 |
| Atg16l2 | 820 | 1833 | 2.235 | ATG16 autophagy related 16-like 2 |
| Atp6v0b | 3169 | 10297 | 3.249 | ATPase, H+ transporting, lysosomal V0 subunit B |
| Atp6v1a | 2647 | 5480 | 2.071 | ATPase, H+ transporting, lysosomal V1 subunit A |
| Atp6v1c1 | 2288 | 4939 | 2.158 | ATPase, H+ transporting, lysosomal V1 subunit C1 |
| Atp6v1d | 1885 | 3984 | 2.114 | ATPase, H+ transporting, lysosomal V1 subunit D |
| Azin1 | 471 | 1075 | 2.282 | antizyme inhibitor 1 |
| Bbc3 | 3929 | 11666 | 2.969 | Bcl-2 binding component 3 |
| Bcar1 | 14263 | 27939 | 1.959 | breast cancer anti-estrogen resistance 1 |
| Bcat1 | 4871 | 16845 | 3.458 | branched chain amino acid transaminase 1, cytosolic |
| Bcl2l1 | 10514 | 25355 | 2.412 | Bcl2-like 1 |
| Bf | 635 | 2165 | 3.411 | complement factor B |
| Bhlhe40 | 307 | 2006 | 6.543 | basic helix-loop-helix family, member e40 |
| Bnip3 | 7804 | 15826 | 2.028 | BCL2/adenovirus E1B interacting protein 3 |
| Bod1 | 724 | 2180 | 3.010 | bioorientation of chromosomes in cell division 1 |
| Bola3 | 1652 | 3421 | 2.071 | bolA homolog 3 (E. coli) |
| Bop1 | 471 | 1031 | 2.189 | block of proliferation 1 |
| Btg1 | 9608 | 26616 | 2.770 | B-cell translocation gene 1, anti-proliferative |
| Btg3 | 340 | 962 | 2.828 | BTG family, member 3 |
| C4b | 2006 | 6562 | 3.272 | complement component 4B (Chido blood group) |
| Cars | 760 | 3616 | 4.757 | cysteinyI-tRNA synthetase |
| Casp12 | 962 | 2504 | 2.603 | caspase 12 |
| Casp4 | 1978 | 14462 | 7.311 | caspase 4, apoptosis-related cysteine peptidase |
| Casp7 | 1820 | 3929 | 2.158 | caspase 7 |
| Catsper2 | 260 | 537 | 2.071 | cation channel, sperm associated 2 |
| Cby3 | 605 | 1380 | 2.282 | chibby homolog 3 (Drosophila) |
| Ccdc101 | 3169 | 6985 | 2.204 | coiled-coil domain containing 101 |
| Ccnc | 461 | 1082 | 2.346 | cyclin C |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|----------|-------|----------------|---------------------|---|
| Ccrn4l | 158 | 576 | 3.655 | CCR4 carbon catabolite repression 4-like |
| Ccser2 | 962 | 1924 | 2.000 | granule cell antiserum positive 14 |
| Cct8 | 588 | 1235 | 2.099 | chaperonin containing Tcp1, subunit 8 (theta) |
| Cd68 | 274 | 622 | 2.266 | Cd68 molecule |
| Cda | 186 | 530 | 2.848 | cytidine deaminase |
| Cdc42se2 | 263 | 657 | 2.497 | CDC42 small effector 2 |
| Cdpf1 | 1287 | 4096 | 3.182 | similar to 2210021J22Rik protein |
| Cebpb | 12161 | 24834 | 2.042 | CCAAT/enhancer binding protein (C/EBP), beta |
| Cebpg | 1409 | 2856 | 2.028 | CCAAT/enhancer binding protein (C/EBP), gamma |
| Cers1 | 1458 | 6165 | 4.228 | ceramide synthase 1 |
| Chchd6 | 1510 | 5149 | 3.411 | coiled-coil-helix-coiled-coil-helix domain containing 6 |
| Chka | 838 | 2759 | 3.294 | choline kinase alpha |
| Ciart | 117 | 1305 | 11.158 | circadian associated repressor of transcription |
| Cisd1 | 12503 | 26616 | 2.129 | CDGSH iron sulfur domain 1 |
| Ciz1 | 1201 | 2539 | 2.114 | CDKN1A interacting zinc finger protein 1 |
| Clpp | 592 | 1399 | 2.362 | ClpP caseinolytic peptidase, ATP-dep., proteolytic subunit homol. |
| Cnfn | 917 | 1938 | 2.114 | cornifelin |
| Cnn3 | 11347 | 36107 | 3.182 | calponin 3, acidic |
| Comtd1 | 8719 | 21619 | 2.479 | catechol-O-methyltransferase domain containing 1 |
| Cops7a | 3468 | 7538 | 2.173 | COP9 constitutive photomorphogenic homolog subunit 7A |
| Coq8b | 1448 | 3169 | 2.189 | aarF domain containing kinase 4 |
| Cox6a2 | 96 | 1924 | 20.112 | cytochrome c oxidase subunit VIa polypeptide 2 |
| Cpeb1 | 1176 | 2504 | 2.129 | cytoplasmic polyadenylation element binding protein 1 |
| Cpeb4 | 315 | 942 | 2.990 | cytoplasmic polyadenylation element binding protein 4 |
| Creb3l1 | 1652 | 7383 | 4.469 | cAMP responsive element binding protein 3-like 1 |
| Crim1 | 19216 | 38699 | 2.014 | cysteine rich transmembrane BMP regulator 1 (chordin like) |
| Cry1 | 263 | 1323 | 5.028 | cryptochrome 1 (photolyase-like) |
| Csda | 7538 | 15393 | 2.042 | cold shock domain protein A |
| Ctps1 | 9027 | 22227 | 2.462 | CTP synthase |
| Cuta | 458 | 1067 | 2.329 | cutA divalent cation tolerance homolog |
| Cyp3a9 | 572 | 1629 | 2.848 | cytochrome P450, family 3, subfamily a, polypeptide 9 |
| Dbp | 9947 | 28329 | 2.848 | D site of albumin promoter (albumin D-box) binding protein |
| Dbt | 471 | 1342 | 2.848 | dihydrolipoamide branched chain transacylase E2 |
| Ddah1 | 7538 | 28725 | 3.811 | dimethylarginine dimethylaminohydrolase 1 |
| Ddit3 | 6794 | 56658 | 8.340 | DNA-damage inducible transcript 3 |
| Ddx59 | 541 | 1305 | 2.412 | DEAD (Asp-Glu-Ala-Asp) box polypeptide 59 |
| Dgka | 519 | 1031 | 1.986 | diacylglycerol kinase, alpha |
| Dhx58 | 232 | 588 | 2.532 | DEXH (Asp-Glu-X-His) box polypeptide 58 |
| Dmtf1 | 3566 | 7082 | 1.986 | cyclin D binding myb-like transcription factor 1 |
| Dnaja3 | 256 | 553 | 2.158 | DnaJ (Hsp40) homolog, subfamily A, member 3 |
| Dnajc2 | 10156 | 24154 | 2.378 | DnaJ (Hsp40) homolog, subfamily C, member 2 |
| Dnajc5 | 468 | 1218 | 2.603 | DnaJ (Hsp40) homolog, subfamily C, member 5 |
| Dnajc6 | 452 | 904 | 2.000 | DnaJ (Hsp40) homolog, subfamily C, member 6 |
| Dohh | 10587 | 22073 | 2.085 | deoxyhypusine hydroxylase/monooxygenase |
| Dok5 | 653 | 1710 | 2.621 | docking protein 5 |
| Dph5 | 2272 | 7231 | 3.182 | DPH5 homolog |
| Dqx1 | 198 | 560 | 2.828 | DEAQ box RNA-dependent ATPase 1 |
| Dus2l | 2504 | 6841 | 2.732 | dihydrouridine synthase 2-like, SMM1 homolog |
| Dusp5 | 989 | 2165 | 2.189 | dual specificity phosphatase 5 |
| Dusp8 | 249 | 666 | 2.676 | dual specificity phosphatase 8 |
| Eef2kmt | 271 | 534 | 1.972 | family with sequence similarity 86, member A |
| Eefsec | 792 | 1833 | 2.313 | eukaryotic elongation factor, selenocysteine-tRNA-specific |
| Eepd1 | 512 | 1269 | 2.479 | endonuclease/exonuclease/phosphatase family domain contain.1 |
| Efna1 | 3191 | 12590 | 3.945 | ephrin A1 |
| Eif1 | 10587 | 27746 | 2.621 | eukaryotic translation initiation factor 1 |
| Eif1b | 1235 | 4837 | 3.918 | eukaryotic translation initiation factor 1B |
| Eif2ak2 | 391 | 982 | 2.514 | eukaryotic translation initiation factor 2-alpha kinase 2 |
| Eif2b3 | 699 | 4771 | 6.821 | eukaryotic translation initiation factor 2B, subunit 3 |
| Eif2s2 | 1160 | 2916 | 2.514 | eukaryotic translation initiation factor 2, subunit 2 beta |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|------------|-------|----------------|---------------------|---|
| Eif4ebp1 | 25532 | 69273 | 2.713 | eukaryotic translation initiation factor 4E binding protein 1 |
| Elmsan1 | 292 | 1428 | 4.891 | similar to transcriptional regulating protein 132 |
| Emp2 | 286 | 1075 | 3.758 | epithelial membrane protein 2 |
| Enc1 | 572 | 1563 | 2.732 | ectodermal-neural cortex 1 |
| Eno2 | 3616 | 9345 | 2.585 | enolase 2, gamma, neuronal |
| Eprs | 4513 | 14165 | 3.138 | glutamyl-prolyl-tRNA synthetase |
| Eps8 | 843 | 3126 | 3.706 | epidermal growth factor receptor pathway substrate 8 |
| Esrra | 7697 | 16845 | 2.189 | estrogen related receptor, alpha |
| Ets2 | 1687 | 6339 | 3.758 | v-ets erythroblastosis virus E26 oncogene homolog 2 |
| Etv3 | 1607 | 3214 | 2.000 | ets variant 3 |
| Exoc3l4 | 269 | 1121 | 4.170 | exocyst complex component 3-like 4 |
| Ezr | 3743 | 9947 | 2.657 | ezrin |
| Faap20 | 437 | 917 | 2.099 | FA core complex associated protein 20 |
| Faf1 | 3083 | 7858 | 2.549 | Fas (TNFRSF6) associated factor 1 |
| Fam110a | 523 | 1176 | 2.250 | family with sequence similarity 110, member A |
| FAM120C | 904 | 1833 | 2.028 | family with sequence similarity 120C |
| Fam129a | 969 | 2916 | 3.010 | family with sequence similarity 129, member A |
| Fam195b | 8135 | 22694 | 2.789 | family with sequence similarity 195, member B |
| Fam50a | 2241 | 4804 | 2.144 | family with sequence similarity 50, member A |
| Fam53a | 360 | 709 | 1.972 | family with sequence similarity 53, member A |
| Fam65b | 11347 | 32542 | 2.868 | family with sequence similarity 65, member B |
| Fam71f1 | 94 | 699 | 7.413 | family with sequence similarity 71, member F1 |
| Farsb | 2957 | 8780 | 2.969 | phenylalanyl-tRNA synthetase, beta subunit |
| Fbxl4 | 1361 | 2937 | 2.158 | F-box and leucine-rich repeat protein 4 |
| Fbxo4 | 832 | 1911 | 2.297 | F-box protein 4 |
| Fkbp5 | 1468 | 3566 | 2.428 | FK506 binding protein 5 |
| Fosl1 | 1235 | 3373 | 2.732 | fos-like antigen 1 |
| Foxk1 | 553 | 2195 | 3.972 | forkhead box K1 |
| Foxs1 | 2452 | 4939 | 2.014 | forkhead box S1 |
| Gadd45a | 2469 | 19083 | 7.727 | growth arrest and DNA-damage-inducible, alpha |
| Gadd45b | 4905 | 20738 | 4.228 | growth arrest and DNA-damage-inducible, beta |
| Gadd45g | 505 | 8249 | 16.336 | growth arrest and DNA-damage-inducible, gamma |
| Gart | 304 | 605 | 1.986 | phosphoribosylglycinamide formyltransferase |
| Gas5 | 68794 | 161369 | 2.346 | growth arrest specific 5 |
| Gbp5 | 815 | 1734 | 2.129 | guanylate binding protein 5 |
| Gcat | 760 | 3191 | 4.199 | glycine C-acetyltransferase |
| Gcsh | 760 | 2106 | 2.770 | glycine cleavage system protein H (aminomethyl carrier) |
| Gdf15 | 236 | 5078 | 21.556 | growth differentiation factor 15 |
| Gga1 | 3397 | 6794 | 2.000 | golgi associated, gamma adaptin ear cont., ARF binding protein 1 |
| Ghitm | 2978 | 11268 | 3.784 | growth hormone inducible transmembrane protein |
| Gmeb1 | 260 | 516 | 1.986 | glucocorticoid modulatory element binding protein 1 |
| Gmfb | 313 | 657 | 2.099 | glia maturation factor, beta |
| Gng5 | 3350 | 8841 | 2.639 | guanine nucleotide binding protein (G protein), gamma 5 |
| Gnl3 | 5914 | 11994 | 2.028 | guanine nucleotide binding protein-like 3 (nucleolar) |
| Gns | 309 | 709 | 2.297 | glucosamine (N-acetyl)-6-sulfatase |
| Got1 | 1629 | 3875 | 2.378 | glutamic-oxaloacetic transaminase 1, (aspartate aminotransferase 1) |
| Gpatch11 | 898 | 2020 | 2.250 | coiled-coil domain containing 75 |
| Gpcpd1 | 251 | 1269 | 5.063 | glycerophosphocholine phosphodiesterase GDE1 homolog |
| Gpr162 | 194 | 639 | 3.294 | G protein-coupled receptor 162 |
| Gpx1 | 8249 | 18306 | 2.219 | glutathione peroxidase 1 |
| Gramd1b | 523 | 1342 | 2.567 | GRAM domain containing 1B |
| Gtf2e1 | 564 | 1261 | 2.235 | general transcription factor IIE, polypeptide 1 (alpha subunit) |
| Gtppb2 | 481 | 1113 | 2.313 | GTP binding protein 2 |
| Gzmc | 231 | 695 | 3.010 | granzyme C |
| H1f0 | 32996 | 102127 | 3.095 | H1 histone family, member 0 |
| H2afj | 20311 | 51063 | 2.514 | H2A histone family, member J |
| H3 histone | 7181 | 21619 | 3.010 | histone cluster 1, H2ai-like |
| H3 histone | 1218 | 3327 | 2.732 | histone cluster 2, H3c2 |
| H3f3b | 23332 | 55492 | 2.378 | H3 histone, family 3B |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|-----------|-------|----------------|---------------------|---|
| Hadhb | 942 | 2574 | 2.732 | hydroxyacyl-CoA dehydrog./3-ketoacyl-CoA thiolase/enoyl-CoA hydrat. β |
| Hars2 | 1031 | 2106 | 2.042 | histidyl-tRNA synthetase 2-like |
| Haus8 | 803 | 1574 | 1.959 | HAUS augmin-like complex, subunit 8 |
| Hax1 | 815 | 1663 | 2.042 | HCLS1 associated protein X-1 |
| Hbegf | 468 | 1361 | 2.908 | heparin-binding EGF-like growth factor |
| Hbs1l | 530 | 1243 | 2.346 | Hbs1-like (<i>S. cerevisiae</i>) |
| Hebp1 | 2180 | 4451 | 2.042 | heme binding protein 1 |
| Herpud1 | 7383 | 18951 | 2.567 | homocysteine- / ER stress-inducible, ubiquitin-like domain member 1 |
| Hexb | 15393 | 34397 | 2.235 | hexosaminidase B |
| Hif1a | 388 | 867 | 2.235 | hypoxia-inducible factor 1, alpha subunit (transcription factor) |
| Hip1r | 6123 | 12246 | 2.000 | huntingtin interacting protein 1 related |
| Hist1h1c | 13216 | 71220 | 5.389 | similar to Histone H1.2 (H1 VAR.1) (H1c) |
| Hist1h1d | 2435 | 9216 | 3.784 | histone cluster 1, H1d |
| Hist1h2af | 16271 | 47644 | 2.928 | histone cluster 1, H2af |
| Hist1h2ak | 21619 | 60725 | 2.809 | histone cluster 1, H2ak |
| Hist1h2bd | 1278 | 4451 | 3.482 | histone cluster 1, H2bm |
| Hist1h2bh | 1585 | 4608 | 2.908 | histone cluster 1, H2bh |
| Hist1h2bk | 3822 | 12766 | 3.340 | histone cluster 1, H2bc |
| Hist1h2bl | 2856 | 10016 | 3.506 | histone cluster 1, H2bl |
| Hist2h2ac | 7332 | 27746 | 3.784 | histone cluster 2, H2ac |
| Hist2h2be | 377 | 826 | 2.189 | histone cluster 2, H2be |
| Hist3h3 | 21028 | 49667 | 2.362 | similar to histone 1, H2ai |
| Hist4h4 | 3350 | 7332 | 2.189 | histone cluster 2, H4 |
| Hmga1 | 402 | 929 | 2.313 | high mobility group AT-hook 1 |
| Hps4 | 362 | 923 | 2.549 | Hermansky-Pudlak syndrome 4 homolog |
| Hrasls | 904 | 2876 | 3.182 | HRAS-like suppressor |
| Hsd17b8 | 1965 | 6252 | 3.182 | hydroxysteroid (17-beta) dehydrogenase 8 |
| Hspa1b | 1629 | 6123 | 3.758 | heat shock 70kD protein 1B |
| Hspa5 | 22227 | 50711 | 2.282 | heat shock protein 5 |
| Hspa9 | 1184 | 7383 | 6.233 | heat shock protein 9 |
| Htatip2 | 2077 | 5833 | 2.809 | HIV-1 tat interactive protein 2, homolog |
| Iars | 2665 | 7181 | 2.694 | isoleucyl-tRNA synthetase |
| Id1 | 267 | 662 | 2.479 | inhibitor of DNA binding 1 |
| Ier5 | 4451 | 22073 | 4.959 | immediate early response 5 |
| Ier5l | 8540 | 19349 | 2.266 | immediate early response 5-like |
| Ifi2712b | 6654 | 88906 | 13.361 | interferon, alpha-inducible protein 27 like 2B |
| Ifit2 | 910 | 2504 | 2.751 | interferon-induced protein with tetratricopeptide repeats 2 |
| Ifit3 | 425 | 1060 | 2.497 | interferon-induced protein with tetratricopeptide repeats 3 |
| Ifngr2 | 3259 | 9810 | 3.010 | interferon gamma receptor 2 |
| Ifrd1 | 4545 | 13682 | 3.010 | interferon-related developmental regulator 1 |
| Igf2bp2 | 7486 | 15076 | 2.014 | insulin-like growth factor 2 mRNA binding protein 2 |
| Il23a | 194 | 648 | 3.340 | Interleukin 23, alpha subunit p19 |
| Ilf3 | 942 | 1846 | 1.959 | interleukin enhancer binding factor 3 |
| Inip | 904 | 1938 | 2.144 | similar to HSPC043 protein |
| Insig1 | 3350 | 12161 | 3.630 | insulin induced gene 1 |
| Ip6k1 | 333 | 820 | 2.462 | inositol hexakisphosphate kinase 1 |
| Ipo5 | 5405 | 11666 | 2.158 | importin 5 |
| Irak3 | 3743 | 10735 | 2.868 | interleukin-1 receptor-associated kinase 3 |
| Irf7 | 2150 | 6383 | 2.969 | interferon regulatory factor 7 |
| Irx2 | 296 | 855 | 2.888 | iroquois homeobox 2 |
| Isg15 | 2665 | 5367 | 2.014 | ISG15 ubiquitin-like modifier |
| Isg20 | 1510 | 3566 | 2.362 | interferon stimulated exonuclease gene 20 |
| Isox | 4482 | 12678 | 2.828 | similar to Retinal homeobox protein Rx (DRx1) (DRx) |
| Itpkc | 311 | 879 | 2.828 | inositol-trisphosphate 3-kinase C |
| Jade1 | 1342 | 3373 | 2.514 | PHD finger protein 17 |
| Junb | 20032 | 56267 | 2.809 | jun B proto-oncogene |
| Kcmf1 | 2150 | 4905 | 2.282 | potassium channel modulatory factor 1 |
| Kcne2 | 437 | 1152 | 2.639 | potassium voltage-gated channel, Isk-related family, member 2 |
| Kctd13 | 317 | 781 | 2.462 | potassium channel tetramerisation domain containing 13 |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|--------------|-------|----------------|---------------------|--|
| Kdm6b | 560 | 1563 | 2.789 | lysine (K)-specific demethylase 6B |
| Kifc3 | 8192 | 20738 | 2.532 | kinesin family member C3 |
| Klc1 | 2304 | 4973 | 2.158 | kinesin light chain 1 |
| Klf10 | 1252 | 4545 | 3.630 | Kruppel-like factor 10 |
| Klf2 | 182 | 755 | 4.141 | Kruppel-like factor 2 (lung) |
| Klf9 | 3104 | 8249 | 2.657 | Kruppel-like factor 9 |
| Klhl21 | 996 | 3541 | 3.555 | kelch-like 21 (Drosophila) |
| Kpna1 | 484 | 1235 | 2.549 | karyopherin alpha 1 |
| Lars | 832 | 2320 | 2.789 | leucyl-tRNA synthetase |
| Lcn2 | 2937 | 5793 | 1.972 | lipocalin 2 |
| Ldlr | 226 | 1038 | 4.595 | low density lipoprotein receptor |
| Letm1 | 1226 | 2778 | 2.266 | leucine zipper-EF-hand containing transmembrane protein 1 |
| Lhfp12 | 564 | 1448 | 2.567 | lipoma HMGIC fusion partner-like 2 |
| Lims2 | 333 | 724 | 2.173 | LIM and senescent cell antigen like domains 2 |
| Lmbrd1 | 635 | 1428 | 2.250 | LMBR1 domain containing 1 |
| LOC102552870 | 13401 | 26432 | 1.972 | similar to 60S ribosomal protein L23a |
| LOC103690178 | 815 | 1652 | 2.028 | similar to Nucleolar GTP-bind.protein 1 (Chronic renal failure gene) |
| LOC103691261 | 272 | 734 | 2.694 | similar to Sperm flagellar protein 1 |
| LOC301725 | 7033 | 14766 | 2.099 | similar to 60S ribosomal protein L35 |
| LOC366632 | 5113 | 11113 | 2.173 | similar to 40S ribosomal protein S6 |
| LOC498154 | 2304 | 5997 | 2.603 | hypothetical protein LOC498154 |
| LOC498675 | 446 | 949 | 2.129 | hypothetical LOC498675 |
| LOC500028 | 1038 | 2385 | 2.297 | hypothetical protein LOC500028 |
| LOC678708 | 347 | 719 | 2.071 | similar to histone 1, H2ai |
| LOC680322 | 27939 | 67378 | 2.412 | similar to Histone H2A type 1 |
| LOC680635 | 2778 | 7332 | 2.639 | similar to 40S ribosomal protein S10 |
| LOC689065 | 131 | 942 | 7.210 | hypothetical protein LOC689065 |
| LOC690386 | 832 | 2062 | 2.479 | hypothetical protein LOC690386 |
| Lonp1 | 5634 | 26432 | 4.691 | lon peptidase 1, mitochondrial |
| Lrrc8b | 324 | 781 | 2.412 | leucine rich repeat containing 8 family, member B |
| Luc7l | 1342 | 2837 | 2.114 | LUC7-like |
| Lvrn | 3169 | 6517 | 2.056 | laeverin |
| Lym9 | 580 | 1448 | 2.497 | RGD1562012 |
| Lysmd2 | 1333 | 2740 | 2.056 | LysM, putative peptidoglycan-binding, domain containing 2 |
| Mafk | 278 | 576 | 2.071 | v-maf musculoaponeurotic fibrosarcoma oncogene homolog K |
| Map2k1 | 2435 | 5149 | 2.114 | mitogen activated protein kinase kinase 1 |
| Map6 | 744 | 2288 | 3.074 | microtubule-associated protein 6 |
| Mapkapk3 | 4837 | 11037 | 2.282 | mitogen-activated protein kinase-activated protein kinase 3 |
| Mars | 3373 | 14362 | 4.257 | methionine-tRNA synthetase |
| Mat2b | 5293 | 10735 | 2.028 | methionine adenosyltransferase II, beta |
| Mccrip2 | 923 | 3769 | 4.084 | family with sequence similarity 195, member A |
| Mcoln1 | 3061 | 6339 | 2.071 | mucolipin 1 |
| Mcub | 843 | 1820 | 2.158 | coiled-coil domain containing 109B |
| Mdm2 | 2504 | 6654 | 2.657 | Mdm2 p53 binding protein homolog (mouse) |
| MDR1a | 88 | 734 | 8.340 | ATP-binding cassette, sub-family B (MDR/TAP), member 1A |
| Mecp2 | 329 | 855 | 2.603 | methyl CpG binding protein 2 |
| Mef2b | 229 | 1370 | 5.979 | myocyte enhancer factor 2B |
| Metnl | 10226 | 29126 | 2.848 | meteorin, glial cell differentiation regulator-like |
| Mettl11a | 410 | 815 | 1.986 | methyltransferase like 11A |
| Mettl22 | 1965 | 5113 | 2.603 | methyltransferase like 22 |
| Mettl3 | 2684 | 5442 | 2.028 | methyltransferase-like 3 |
| MGC105649 | 537 | 1771 | 3.294 | hypothetical LOC302884 |
| Mgea5 | 534 | 1053 | 1.972 | meningioma expressed antigen 5 (hyaluronidase) |
| Micu1 | 5753 | 14263 | 2.479 | mitochondrial calcium uptake 1 |
| Mid1ip1 | 5293 | 14067 | 2.657 | MID1 interacting protein 1 (gastrulation specific G12 homolog) |
| Mmaa | 530 | 1323 | 2.497 | methylmalonic aciduria (cobalamin deficiency) cblA type |
| Mnt | 6841 | 23332 | 3.411 | max binding protein |
| Mok | 340 | 787 | 2.313 | MOK protein kinase |
| Mospd1 | 315 | 639 | 2.028 | motile sperm domain containing 1 |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------|-------|----------------|---------------------|--|
| Mpp5 | 605 | 1351 | 2.235 | membrane protein, palmitoylated 5 (MAGUK p55 subfamily member 5) |
| Mpv17l2 | 9608 | 24154 | 2.514 | MPV17 mitochondrial membrane protein-like 2 |
| Mri1 | 2385 | 5293 | 2.219 | methylthioribose-1-phosphate isomerase homolog |
| Mrnip | 609 | 1351 | 2.219 | MRN complex interacting protein |
| Mrpl17 | 11426 | 22694 | 1.986 | mitochondrial ribosomal protein L17 |
| Mrpl38 | 488 | 1060 | 2.173 | mitochondrial ribosomal protein L38 |
| Mrpl55 | 4012 | 8481 | 2.114 | mitochondrial ribosomal protein L55 |
| Mrps18b | 516 | 1226 | 2.378 | mitochondrial ribosomal protein S18B |
| Mt1a | 45703 | 116502 | 2.549 | metallothionein 1a |
| Mthfd1 | 929 | 3083 | 3.317 | methylenetetrahydrofolate dehydrogenase 1, -cyclohydrolase |
| Mthfd2 | 1380 | 13588 | 9.849 | methylenetetrahydrofolate dehydrogenase 2, -cyclohydrolase |
| Mtpap | 923 | 1911 | 2.071 | mitochondrial poly(A) polymerase |
| Mus81 | 534 | 1389 | 2.603 | MUS81 endonuclease homolog |
| Mxd1 | 362 | 776 | 2.144 | max dimerization protein 1 |
| Myo5a | 1510 | 3083 | 2.042 | myosin VA |
| N4bp2l1 | 269 | 826 | 3.074 | NEDD4 binding protein 2-like 1 |
| Naglu | 3902 | 20882 | 5.352 | N-acetyl-alpha-glucosaminidase |
| Nampt | 452 | 1193 | 2.639 | nicotinamide phosphoribosyltransferase |
| Nars | 671 | 2336 | 3.482 | asparaginyl-tRNA synthetase |
| Nckipsd | 1097 | 3191 | 2.908 | NCK interacting protein with SH3 domain |
| Ndufaf6 | 891 | 1746 | 1.959 | NADH:ubiquinone oxidoreductase complex assembly factor 6 |
| Nek6 | 1121 | 2385 | 2.129 | NIMA (never in mitosis gene a)-related kinase 6 |
| Neu1 | 617 | 1428 | 2.313 | sialidase 1 (lysosomal sialidase) |
| Nfe2l1 | 1038 | 3984 | 3.837 | nuclear factor, erythroid derived 2,-like 1 |
| Nfe2l2 | 13034 | 27554 | 2.114 | nuclear factor, erythroid derived 2, like 2 |
| Nfu1 | 242 | 739 | 3.053 | NFU1 iron-sulfur cluster scaffold homolog |
| Nfyb | 1168 | 2504 | 2.144 | nuclear transcription factor-Y beta |
| Ngdn | 2978 | 7033 | 2.362 | neuroguidin, EIF4E binding protein |
| Ninj1 | 1783 | 3492 | 1.959 | ninjurin 1 |
| Nkain1 | 820 | 1771 | 2.158 | Na+/K+ transporting ATPase interacting 1 |
| Nkx6-3 | 867 | 1783 | 2.056 | NK6 homeobox 3 |
| Nmnat3 | 1278 | 3061 | 2.395 | nicotinamide nucleotide adenyltransferase 3 |
| Nol8 | 936 | 1846 | 1.972 | nucleolar protein 8 |
| Nop14 | 4068 | 8719 | 2.144 | NOP14 nucleolar protein homolog |
| Nop58 | 3019 | 6747 | 2.235 | nucleolar protein NOP58 |
| Npap60 | 3848 | 12766 | 3.317 | nuclear pore associated protein |
| Npas2 | 247 | 519 | 2.099 | neuronal PAS domain protein 2 |
| Npc1 | 3666 | 7858 | 2.144 | Cdig2 protein |
| Npepl1 | 568 | 1176 | 2.071 | aminopeptidase-like 1 |
| Nphp1 | 2539 | 10735 | 4.228 | nephronophthisis 1 (juvenile) homolog |
| Nr1d1 | 288 | 1924 | 6.681 | nuclear receptor subfamily 1, group D, member 1 |
| Nrf1 | 471 | 1017 | 2.158 | nuclear respiratory factor 1 |
| Nrg1 | 242 | 622 | 2.567 | neuregulin 1 |
| Nsd1 | 861 | 1771 | 2.056 | nuclear receptor binding SET domain protein 1 |
| Nsd2 | 434 | 861 | 1.986 | Wolf-Hirschhorn syndrome candidate 1 |
| Nudt6 | 256 | 695 | 2.713 | nudix (nucleoside diphosphate linked moiety X)-type motif 6 |
| Nudt9 | 1911 | 4451 | 2.329 | nudix (nucleoside diphosphate linked moiety X)-type motif 9 |
| Nup54 | 370 | 861 | 2.329 | nucleoporin 54 |
| Odc1 | 1783 | 6252 | 3.506 | ornithine decarboxylase 1 |
| Optn | 4482 | 9541 | 2.129 | optineurin |
| Oser1 | 3875 | 10809 | 2.789 | oxidative stress responsive gene |
| Otub2 | 2034 | 4738 | 2.329 | OTU domain, ubiquitin aldehyde binding 2 |
| P2ry2 | 391 | 1160 | 2.969 | purinergic receptor P2Y, G-protein coupled, 2 |
| Pak1ip1 | 431 | 1552 | 3.605 | PAK1 interacting protein 1 |
| Paox | 4939 | 10016 | 2.028 | polyamine oxidase (exo-N4-amino) |
| Pappa1 | 143 | 501 | 3.506 | pregnancy-associated plasma protein A |
| Parvb | 261 | 644 | 2.462 | parvin, beta |
| Pck2 | 4837 | 10661 | 2.204 | phosphoenolpyruvate carboxykinase 2 (mitochondrial) |
| Pcp4l1 | 2135 | 4182 | 1.959 | Purkinje cell protein 4-like 1 |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|------------|-------|----------------|---------------------|---|
| Pcsk4 | 3517 | 7033 | 2.000 | proprotein convertase subtilisin/kexin type 4 |
| Pdcd6 | 9476 | 19216 | 2.028 | programmed cell death 6 |
| Pdrg1 | 1687 | 3984 | 2.362 | p53 and DNA damage regulated 1 |
| Pfkp | 4182 | 11037 | 2.639 | phosphofructokinase, platelet |
| Phgdh | 9476 | 38166 | 4.028 | phosphoglycerate dehydrogenase |
| Pigp | 8903 | 17805 | 2.000 | phosphatidylinositol glycan anchor biosynthesis, class P |
| Pim1 | 125 | 803 | 6.409 | pim-1 oncogene |
| Pim3 | 4608 | 13401 | 2.908 | pim-3 oncogene |
| Pknox1 | 237 | 744 | 3.138 | PBX/knotted 1 homeobox 1 |
| Pkp1 | 5518 | 29328 | 5.315 | plakophilin 1 |
| Pkp2 | 855 | 2876 | 3.364 | plakophilin 2 |
| Plekha4 | 2504 | 8719 | 3.482 | pleckstrin homology domain containing, family A member 4 |
| Plekhg5 | 307 | 653 | 2.129 | pleckstrin homology domain containing, family G member 5 |
| Pnpla2 | 910 | 2487 | 2.732 | patatin-like phospholipase domain containing 2 |
| Polg2 | 461 | 910 | 1.972 | polymerase (DNA directed), gamma 2, accessory subunit |
| Ppat | 284 | 592 | 2.085 | phosphoribosyl pyrophosphate amidotransferase |
| Ppp1r15a | 2469 | 39512 | 16.000 | protein phosphatase 1, regulatory subunit 15A |
| Ppp1r32 | 639 | 1323 | 2.071 | protein phosphatase 1, regulatory subunit 32 |
| Prag1 | 226 | 592 | 2.621 | pragma of Rnd2 |
| Prdx5 | 36866 | 87077 | 2.362 | peroxiredoxin 5 |
| Prepl | 468 | 1370 | 2.928 | prolyl endopeptidase-like |
| Prmt1 | 15393 | 32317 | 2.099 | protein arginine methyltransferase 1 |
| Prmt5 | 724 | 1448 | 2.000 | protein arginine methyltransferase 5 |
| Prmt7 | 744 | 1758 | 2.362 | protein arginine methyltransferase 7 |
| Proser2 | 296 | 1010 | 3.411 | hypothetical protein LOC683460 |
| Prpf40b | 729 | 1783 | 2.445 | pre-mRNA processing factor 40 homolog B |
| Prr7 | 2077 | 5257 | 2.532 | proline rich 7 (synaptic) |
| Psat1 | 5914 | 12161 | 2.056 | phosphoserine aminotransferase 1 |
| Psph | 530 | 1618 | 3.053 | phosphoserine phosphatase |
| Ptcd2 | 508 | 1193 | 2.346 | pentatricopeptide repeat domain 2 |
| Ptges2 | 288 | 885 | 3.074 | prostaglandin E synthase 2 |
| Ptp4a1 | 6252 | 25006 | 4.000 | protein tyrosine phosphatase type IVA, member 1 |
| Ptpdc1 | 307 | 826 | 2.694 | protein tyrosine phosphatase domain containing 1 |
| Ptpm | 278 | 826 | 2.969 | protein tyrosine phosphatase, receptor type, M |
| Qsox2 | 413 | 1003 | 2.428 | quiescin Q6 sulfhydryl oxidase 2 |
| R3hdm1 | 2876 | 13777 | 4.790 | R3H domain containing 1 |
| Rab11fip5 | 8364 | 21921 | 2.621 | similar to RAB11 family interacting protein 5 (class I) isoform 1 |
| Rab32 | 576 | 1499 | 2.603 | RAB32, member RAS oncogene family |
| Rab3il1 | 300 | 676 | 2.250 | RAB3A interacting protein (rabin3)-like 1 |
| Rabggtb | 7968 | 18179 | 2.282 | Rab geranylgeranyltransferase, beta subunit |
| Rad23a | 657 | 1389 | 2.114 | RAD23 homolog A |
| Rad9b | 639 | 1618 | 2.532 | RAD9 homolog B |
| Rae1 | 1563 | 3104 | 1.986 | RAE1 RNA export 1 homolog |
| Rai14 | 5557 | 21921 | 3.945 | retinoic acid induced 14 |
| Rala | 6383 | 15393 | 2.412 | v-ral simian leukemia viral oncogene homolog A (ras related) |
| Rangrf | 263 | 576 | 2.189 | RAN guanine nucleotide release factor |
| Rars2 | 1898 | 4096 | 2.158 | arginyl-tRNA synthetase 2, mitochondrial |
| Rasl12 | 399 | 2419 | 6.063 | RAS-like, family 12 |
| Rassf5 | 286 | 596 | 2.085 | Ras association (RalGDS/AF-6) domain family member 5 |
| Rbm28 | 832 | 1663 | 2.000 | RNA binding motif protein 28 |
| Rbm38 | 709 | 1938 | 2.732 | RNA binding motif protein 38 |
| Rcc2 | 898 | 2304 | 2.567 | regulator of chromosome condensation 2 |
| Rel2 | 873 | 6562 | 7.516 | RELT-like 2 |
| Renbp | 898 | 2020 | 2.250 | renin binding protein |
| RGD1304624 | 265 | 1024 | 3.864 | similar to RIKEN cDNA 2700097O09 |
| RGD1311739 | 3214 | 7281 | 2.266 | similar to RIKEN cDNA 1700037H04 |
| RGD1559892 | 4012 | 8023 | 2.000 | ribosomal protein L29 pseudogene |
| RGD1560073 | 20311 | 40342 | 1.986 | similar to ribosomal protein S10 |
| RGD1561520 | 49667 | 104996 | 2.114 | similar to Ab2-162 |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------------|-------|----------------|---------------------|--|
| RGD1561871 | 23332 | 46663 | 2.000 | similar to ribosomal protein S10 |
| RGD1562114 | 7643 | 19083 | 2.497 | RGD1562114 |
| RGD1562378 | 534 | 1201 | 2.250 | histone H4 variant H4-v.1 |
| RGD1563378 | 11585 | 34636 | 2.990 | similar to ferritin heavy polypeptide-like 17 |
| RGD1564482 | 714 | 1499 | 2.099 | RGD1564482 |
| RGD1565033 | 666 | 2106 | 3.160 | similar to hypothetical protein LOC284018 isoform b |
| RGD1565170 | 4545 | 9345 | 2.056 | similar to 60S ribosomal protein L23a |
| RGD1566033 | 300 | 750 | 2.497 | similar to BC003940 protein |
| Rgs3 | 8192 | 21028 | 2.567 | regulator of G-protein signaling 3 |
| Rhbdf2 | 425 | 873 | 2.056 | rhomboid 5 homolog 2 (Drosophila) |
| Rhob | 331 | 648 | 1.959 | ras homolog gene family, member B |
| Riok3 | 3492 | 19484 | 5.579 | RIO kinase 3 (yeast) |
| Rnf34 | 1758 | 3517 | 2.000 | ring finger protein 34 |
| RP4 | 1885 | 6608 | 3.506 | RGD1559532 |
| Rpe | 657 | 1296 | 1.972 | ribulose-5-phosphate-3-epimerase |
| Rpf2 | 452 | 885 | 1.959 | ribosome production factor 2 homolog (S. cerevisiae) |
| Rpl10l | 1097 | 2336 | 2.129 | ribosomal protein L10-like |
| Rragd | 365 | 2150 | 5.897 | Ras-related GTP binding D |
| Rrp12 | 609 | 1520 | 2.497 | similar to Protein KIAA0690 |
| Rrp9 | 1418 | 3769 | 2.657 | ribosomal RNA process.9, small subunit (SSU) processome comp. |
| Rsad1 | 407 | 1351 | 3.317 | similar to radical S-adenosyl methionine domain containing 1 |
| Rsad2 | 331 | 2435 | 7.362 | radical S-adenosyl methionine domain containing 2 |
| Runx1 | 5955 | 19484 | 3.272 | runt-related transcription factor 1 |
| Rwdd1 | 6252 | 14263 | 2.282 | RWD domain containing 1 |
| Sacm1l | 680 | 1552 | 2.282 | SAC1 suppressor of actin mutations 1-like |
| Samd4a | 929 | 2721 | 2.928 | sterile alpha motif domain containing 4A |
| Sars | 1758 | 6081 | 3.458 | seryl-tRNA synthetase |
| Sdad1 | 478 | 982 | 2.056 | SDA1 domain containing 1 |
| Sdcbp2 | 168 | 765 | 4.563 | syndecan binding protein (syntenin) 2 |
| Sdf2l1 | 2180 | 7281 | 3.340 | stromal cell-derived factor 2-like 1 |
| Sdr39u1 | 734 | 1618 | 2.204 | short chain dehydrogenase/reductase family 39U, member 1 |
| Selenow | 1218 | 2487 | 2.042 | selenoprotein W, 1 |
| Sema3b | 2106 | 4608 | 2.189 | sema domain, Ig & short basic domain, secreted, (semaphorin) 3B |
| Serac1 | 416 | 1128 | 2.713 | serine active site containing 1 |
| Serpine1 | 4871 | 15393 | 3.160 | serpin peptidase inhibitor, clade E, member 1 |
| Sesn2 | 152 | 519 | 3.411 | sestrin 2 |
| Sfxn1 | 1010 | 3397 | 3.364 | sideroflexin 1 |
| Sh3bp2 | 4153 | 10156 | 2.445 | SH3-domain binding protein 2 |
| Shc2 | 580 | 1641 | 2.828 | SHC (Src homology 2 domain containing) transforming protein 2 |
| Shisa4 | 410 | 1144 | 2.789 | shisa homolog 4 |
| Shisa5 | 3444 | 6841 | 1.986 | shisa homolog 5 |
| Shmt1 | 734 | 2048 | 2.789 | serine hydroxymethyltransferase 1 (soluble) |
| Shmt2 | 1333 | 5595 | 4.199 | serine hydroxymethyltransferase 2 (mitochondrial) |
| Sik1 | 309 | 630 | 2.042 | salt-inducible kinase 1 |
| Sirt3 | 478 | 949 | 1.986 | sirtuin 3 |
| Skil | 191 | 553 | 2.888 | SKI-like oncogene |
| Slc16a1 | 329 | 1105 | 3.364 | solute carrier family 16, member 1 (monocarbox.acid transporter 1) |
| Slc17a5 | 1783 | 3591 | 2.014 | solute carrier family 17 (anion/sugar transporter), member 5 |
| Slc1a5 | 1152 | 3692 | 3.204 | solute carrier family 1 (neutral amino acid transporter), member 5 |
| Slc20a1 | 3591 | 12161 | 3.387 | solute carrier family 20 (phosphate transporter), member 1 |
| Slc20a2 | 9027 | 19756 | 2.189 | solute carrier family 20 (phosphate transporter), member 2 |
| Slc25a12 | 3984 | 7968 | 2.000 | solute carrier family 25 (mitochondrial carrier, Aralar), member 12 |
| Slc25a25 | 1652 | 4738 | 2.868 | solute carrier family 25 (mitochondrial carrier, phosph.), member 25 |
| Slc25a30 | 1428 | 3104 | 2.173 | solute carrier family 25, member 30 |
| Slc25a33 | 260 | 1531 | 5.897 | solute carrier family 25, member 33 |
| Slc25a37 | 197 | 776 | 3.945 | solute carrier family 25, member 37 |
| Slc25a38 | 1075 | 2740 | 2.549 | solute carrier family 25, member 38 |
| Slc2a1 | 3717 | 11994 | 3.227 | solute carrier family 2 (facilitated glucose transporter), member 1 |
| Slc33a1 | 416 | 815 | 1.959 | solute carrier family 33 (acetyl-CoA transporter), member 1 |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|----------|-------|----------------|---------------------|---|
| Slc3a2 | 3795 | 29532 | 7.781 | solute carrier family 3 (activat.dibasic & neutral AA transp.), memb. 2 |
| Slc6a9 | 331 | 1428 | 4.317 | solute carrier family 6 (neurotransmitter transp., glycine), member 9 |
| Slc7a1 | 556 | 1607 | 2.888 | solute carrier family 7 (cationic amino acid transporter), member 1 |
| Slc7a5 | 249 | 1698 | 6.821 | solute carrier family 7 (amino acid transporter light chain), member 5 |
| Sln2 | 750 | 2210 | 2.949 | schlafen 2 |
| Smad1 | 1269 | 3083 | 2.428 | SMAD family member 1 |
| Smg6 | 437 | 1176 | 2.694 | Smg-6 homolog, nonsense mediated mRNA decay factor |
| Smg9 | 553 | 1105 | 2.000 | smg-9 homolog, nonsense mediated mRNA decay factor |
| Smim29 | 4837 | 10885 | 2.250 | small integral membrane protein 29 |
| Snx12 | 393 | 867 | 2.204 | sorting nexin 12 |
| Snx8 | 169 | 534 | 3.160 | sorting nexin 8 |
| Sp2 | 333 | 709 | 2.129 | Sp2 transcription factor |
| Specc11 | 553 | 1097 | 1.986 | sperm antigen with calponin homol. and coiled-coil domains 1-like |
| Spf1 | 1046 | 2385 | 2.282 | sperm flagellar 1 |
| Spout1 | 690 | 1820 | 2.639 | similar to LOC495800 protein |
| Sqstm1 | 13970 | 28924 | 2.071 | sequestosome 1 |
| Srebf1 | 4240 | 10661 | 2.514 | sterol regulatory element binding transcription factor 1 |
| Srfbp1 | 622 | 1380 | 2.219 | serum response factor binding protein 1 |
| Srgap2 | 4608 | 10809 | 2.346 | SLIT-ROBO Rho GTPase activating protein 2 |
| Srm | 3169 | 8364 | 2.639 | spermidine synthase |
| Srp68 | 5753 | 11268 | 1.959 | signal recognition particle 68 |
| Srrd | 704 | 1389 | 1.972 | SRR1 domain containing |
| Ssu72 | 6747 | 14462 | 2.144 | SSU72 RNA polymerase II CTD phosphatase homolog |
| St7l | 3517 | 7332 | 2.085 | suppression of tumorigenicity 7-like |
| Stambpl1 | 2876 | 6123 | 2.129 | similar to AMSH-family protein |
| Stat2 | 4012 | 9027 | 2.250 | signal transducer and activator of transcription 2 |
| Stbd1 | 338 | 1924 | 5.696 | starch binding domain 1 |
| Steap3 | 530 | 1531 | 2.888 | STEAP family member 3, metalloredutase |
| Stk11ip | 304 | 750 | 2.462 | serine/threonine kinase 11 interacting protein |
| Strbp | 1323 | 2665 | 2.014 | spermatid perinuclear RNA binding protein |
| Stxbp5 | 333 | 704 | 2.114 | syntaxin binding protein 5 (tomosyn) |
| Stylx1 | 626 | 1252 | 2.000 | serine/threonine/tyrosine interacting-like 1 |
| Surf1 | 3492 | 6937 | 1.986 | surfeit 1 |
| Surf2 | 4068 | 9281 | 2.282 | surfeit 2 |
| Taf1d | 2385 | 9090 | 3.811 | TATA box bind.protein (Tbp)-associated factor, RNA polymerase I, D |
| Tap1 | 657 | 1820 | 2.770 | transporter 1, ATP-binding cassette, sub-family B (MDR/TAP) |
| Tap2 | 4068 | 8023 | 1.972 | transporter 2, ATP-binding cassette, sub-family B (MDR/TAP) |
| Tapbp | 1269 | 2610 | 2.056 | TAP binding protein |
| Tardbp | 3019 | 6165 | 2.042 | TAR DNA binding protein |
| Tars | 5914 | 18179 | 3.074 | threonyl-tRNA synthetase |
| Tars2 | 4300 | 9742 | 2.266 | threonyl-tRNA synthetase 2, mitochondrial (putative) |
| Tbc1d20 | 541 | 1520 | 2.809 | TBC1 domain family, member 20 |
| Tbccd1 | 380 | 744 | 1.959 | TBCC domain containing 1 |
| Tcea2 | 402 | 820 | 2.042 | transcription elongation factor A (SII), 2 |
| Tfap4 | 609 | 1965 | 3.227 | transcription factor AP-4 |
| Tfpt | 383 | 755 | 1.972 | TCF3 (E2A) fusion partner |
| Tgfr2 | 685 | 1951 | 2.848 | transforming growth factor, beta receptor II |
| Timm8a1 | 1287 | 2957 | 2.297 | translocase of inner mitochondrial membrane 8 homolog a1 |
| Tjap1 | 5634 | 11347 | 2.014 | tight junction associated protein 1 |
| Tjp3 | 108 | 501 | 4.659 | tight junction protein 3 |
| Tlcd1 | 1168 | 4482 | 3.837 | TLC domain containing 1 |
| Tma16 | 1053 | 3517 | 3.340 | similar to RIKEN cDNA 1810029B16 |
| Tmco4 | 1176 | 2937 | 2.497 | transmembrane and coiled-coil domains 4 |
| Tmem116 | 135 | 781 | 5.776 | transmembrane protein 116 |
| Tmem140 | 1846 | 6252 | 3.387 | transmembrane protein 140 |
| Tmem189 | 622 | 1479 | 2.378 | transmembrane protein 189 |
| Tmem192 | 1010 | 2048 | 2.028 | transmembrane protein 192 |
| Tmem199 | 261 | 530 | 2.028 | transmembrane protein 199 |
| Tmem250 | 474 | 1269 | 2.676 | RGD1564379 |

Table S6A continued

| Symbol | Fb | Fb+AS-Tsp8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|----------|-------|----------------|---------------------|---|
| Tmem256 | 14165 | 32542 | 2.297 | transmembrane protein 256 |
| Tmem268 | 2165 | 7033 | 3.249 | similar to RIKEN cDNA 6330416G13 gene |
| Tmem55b | 449 | 1128 | 2.514 | transmembrane protein 55B |
| Tmem62 | 343 | 1361 | 3.972 | transmembrane protein 62 |
| Tnip2 | 1082 | 2504 | 2.313 | TNFAIP3 interacting protein 2 |
| Tollip | 4451 | 8903 | 2.000 | toll interacting protein |
| Tom1 | 14362 | 36866 | 2.567 | target of myb1 homolog |
| Tp53inp1 | 370 | 1563 | 4.228 | tumor protein p53 inducible nuclear protein 1 |
| Traf2 | 917 | 2647 | 2.888 | Tnf receptor-associated factor 2 |
| Trib3 | 194 | 3397 | 17.509 | tribbles homolog 3 |
| Trim37 | 377 | 815 | 2.158 | tripartite motif-containing 37 |
| Trim8 | 1261 | 2521 | 2.000 | tripartite motif-containing 8 |
| Trit1 | 393 | 885 | 2.250 | tRNA isopentenyltransferase 1 |
| Trpt1 | 613 | 1361 | 2.219 | tRNA phosphotransferase 1 |
| Tsc22d3 | 2006 | 4300 | 2.144 | TSC22 domain family, member 3 |
| Tspan5 | 861 | 2226 | 2.585 | tetraspanin 5 |
| Tssc4 | 7591 | 15936 | 2.099 | tumor suppressing subtransferable candidate 4 |
| Ttc39c | 7968 | 22851 | 2.868 | hypothetical protein LOC686179 |
| Tyw5 | 1010 | 1978 | 1.959 | tRNA-yW synthesizing protein 5 |
| Uap111 | 13401 | 41190 | 3.074 | UDP-N-acetylglucosamine pyrophosphorylase 1-like 1 |
| Ubal2 | 13034 | 32317 | 2.479 | family with sequence similarity 100, member B |
| Ube4b | 714 | 1438 | 2.014 | ubiquitination factor E4B |
| Ubqln1 | 3666 | 7858 | 2.144 | ubiquilin 1 |
| Uchl5 | 917 | 1911 | 2.085 | ubiquitin carboxyl-terminal hydrolase L5 |
| Uck2 | 4576 | 17929 | 3.918 | uridine-cytidine kinase 2 |
| Unc5b | 286 | 704 | 2.462 | unc-5 homolog B |
| Upp1 | 3281 | 6747 | 2.056 | uridine phosphorylase 1 |
| Uprt | 431 | 1458 | 3.387 | uracil phosphoribosyltransferase (FUR1) homolog |
| Uqcc2 | 3795 | 7434 | 1.959 | similar to RIKEN cDNA 2900010M23 |
| Uri1 | 2998 | 6608 | 2.204 | URI1, prefoldin-like chaperone |
| Usp14 | 2452 | 5557 | 2.266 | ubiquitin specific peptidase 14 |
| Usp18 | 242 | 1734 | 7.160 | ubiquitin specific peptidase 18 |
| Vapa | 9476 | 20311 | 2.144 | VAMP (vesicle-associated membrane protein)-associated protein A |
| Vegfa | 2304 | 7858 | 3.411 | vascular endothelial growth factor A |
| Vhl | 4673 | 10226 | 2.189 | von Hippel-Lindau tumor suppressor |
| Wars | 5149 | 43841 | 8.515 | tryptophanyl-tRNA synthetase |
| Wdcp | 685 | 1698 | 2.479 | WD repeat and coiled coil containing |
| Wdfy1 | 2288 | 6747 | 2.949 | WD repeat and FYVE domain containing 1 |
| Wdr12 | 347 | 709 | 2.042 | WD repeat domain 12 |
| Wdr25 | 867 | 2048 | 2.362 | WD repeat domain 25-like |
| Wdr70 | 942 | 2048 | 2.173 | WD repeat domain 70 |
| Wdr77 | 1585 | 3126 | 1.972 | WD repeat domain 77 |
| Wdr89 | 272 | 556 | 2.042 | WD repeat domain 89 |
| Whamm | 413 | 815 | 1.972 | WAS protein homolog associated with actin, golgi and microtubules |
| Wwc2 | 1992 | 4211 | 2.114 | WW and C2 domain containing 2 |
| Xpo1 | 1252 | 3421 | 2.732 | exportin 1, CRM1 homolog |
| Xpot | 1510 | 3591 | 2.378 | exportin, tRNA (nuclear export receptor for tRNAs) |
| Yae1d1 | 1235 | 2957 | 2.395 | Yae1 domain containing 1 |
| Yars | 613 | 2336 | 3.811 | tyrosyl-tRNA synthetase |
| Ypel5 | 4871 | 17929 | 3.681 | yippee-like 5 |
| Zbtb21 | 534 | 1333 | 2.497 | zinc finger protein 295 |
| Zbtb38 | 425 | 955 | 2.250 | zinc finger and BTB domain containing 38 |
| Zbtb7b | 553 | 2521 | 4.563 | zinc finger and BTB domain containing 7B |
| Zc3h8 | 1105 | 5595 | 5.063 | zinc finger CCCH type containing 8 |
| Zfand2a | 2419 | 7281 | 3.010 | zinc finger, AN1-type domain 2A |
| Zfp280c | 936 | 1924 | 2.056 | suppressor of hairy wing homolog 3 |
| Zfp775 | 377 | 873 | 2.313 | zinc finger protein 775 |
| Zfr | 7033 | 19756 | 2.809 | zinc finger RNA binding protein |
| Zmynd15 | 428 | 949 | 2.219 | zinc finger, MYND-type containing 15 |

Table S6B

AS-Tspan8-TEX coculture-induced Fb mRNA downregulation

| Symbol ^a | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------------------|--------|------------------|---------------------|---|
| Aamdc | 1370 | 657 | 0.480 | adipogenesis associated, Mth938 domain containing |
| Abt1 | 622 | 286 | 0.460 | activator of basal transcription 1 |
| Acat2 | 9027 | 2369 | 0.262 | acetyl-Coenzyme A acetyltransferase 3 |
| Acpl2 | 508 | 246 | 0.483 | acid phosphatase-like 2 |
| Acss2 | 690 | 249 | 0.361 | acyl-CoA synthetase short-chain family member 2 |
| Acy3 | 4360 | 1898 | 0.435 | aspartoacylase (aminocyclase) 3 |
| Adam10 | 949 | 335 | 0.354 | ADAM metallopeptidase domain 10 |
| Adam15 | 1641 | 676 | 0.412 | a disintegrin and metallopeptidase domain 15 (metargidin) |
| Adam9 | 588 | 282 | 0.480 | ADAM metallopeptidase domain 9 |
| Adamts15 | 1489 | 671 | 0.451 | ADAM metallopeptidase with thrombospondin type 1 motif, 15 |
| Adamts2 | 3875 | 982 | 0.253 | ADAM metallopeptidase with thrombospondin type 1 motif, 2 |
| Adarb1 | 1771 | 690 | 0.390 | adenosine deaminase, RNA-specific, B1 |
| Adcy9 | 474 | 195 | 0.412 | adenylate cyclase 9 |
| Akap17b | 422 | 211 | 0.500 | A kinase (PRKA) anchor protein 17B |
| Akr1c13 | 605 | 195 | 0.323 | aldo-keto reductase family 1, member C13 |
| Akr1c19 | 488 | 191 | 0.392 | aldo-keto reductase family 1, member C19 |
| Akr1e2 | 1641 | 505 | 0.308 | aldo-keto reductase family 1, member E2 |
| Aldh3a1 | 20882 | 1287 | 0.062 | aldehyde dehydrogenase 3 family, member A1 |
| Aldh5a1 | 1038 | 315 | 0.304 | aldehyde dehydrogenase 5 family, member A1 |
| Ankrd37 | 609 | 144 | 0.237 | ankyrin repeat domain 37 |
| Ankrd50 | 1209 | 605 | 0.500 | ankyrin repeat domain 50 |
| Anpep | 478 | 174 | 0.363 | alanyl (membrane) aminopeptidase |
| Anxa1 | 139509 | 61147 | 0.438 | annexin A1 |
| Anxa6 | 11037 | 5405 | 0.490 | annexin A6 |
| Aoc3 | 5634 | 596 | 0.106 | amine oxidase, copper containing 3 (vascular adhesion protein 1) |
| Aox1 | 9742 | 1951 | 0.200 | aldehyde oxidase 1 |
| Ap2s1 | 22851 | 9090 | 0.398 | adaptor-related protein complex 2, sigma 1 subunit |
| Aqp1 | 461 | 151 | 0.328 | aquaporin 1 |
| Arg1 | 6889 | 1859 | 0.270 | arginase, liver |
| Arglu1 | 11113 | 5257 | 0.473 | arginine and glutamate rich 1 |
| Arhgap11a | 505 | 212 | 0.420 | Rho GTPase activating protein 11A |
| Arhgap18 | 501 | 195 | 0.390 | Rho GTPase activating protein 18 |
| Arhgap28 | 2006 | 630 | 0.314 | Rho GTPase activating protein 28 |
| Arl2bp | 3566 | 1687 | 0.473 | ADP-ribosylation factor-like 2 binding protein |
| Arnt2 | 1314 | 541 | 0.412 | aryl hydrocarbon receptor nuclear translocator 2 |
| Arpc1a | 4182 | 2077 | 0.497 | actin related protein 2/3 complex, subunit 1A |
| Arpc5 | 26616 | 11037 | 0.415 | actin related protein 2/3 complex, subunit 5 |
| Arsi | 1992 | 553 | 0.277 | arylsulfatase family, member I |
| Asf1b | 630 | 274 | 0.435 | ASF1 anti-silencing function 1 homolog B |
| Aspm | 2916 | 1428 | 0.490 | asp (abnormal spindle) homolog, microcephaly associated |
| Aspn | 5221 | 272 | 0.052 | asporin |
| Atp2c1 | 1783 | 826 | 0.463 | ATPase, Ca ⁺⁺ transporting, type 2C, member 1 |
| Atp5j2 | 55492 | 23657 | 0.426 | ATP synthase, H ⁺ transporting, mitochondrial Fo complex, subunit F2 |
| Aurka | 1652 | 662 | 0.401 | aurora kinase A |
| Bhmt | 596 | 241 | 0.403 | betaine-homocysteine S-methyltransferase |
| Birc5 | 2369 | 826 | 0.349 | baculoviral IAP repeat-containing 5 |
| Bloc1s1 | 11666 | 4240 | 0.363 | biogenesis of lysosomal organelles complex-1, subunit 1 |
| Bmp4 | 12417 | 2721 | 0.219 | bone morphogenetic protein 4 |
| Bnip3l | 22073 | 10016 | 0.454 | BCL2/adenovirus E1B interacting protein 3-like |
| Borcs7 | 1269 | 576 | 0.454 | BLOC-1 related complex subunit 7 |
| Borcs8 | 1820 | 596 | 0.328 | BLOC-1 related complex subunit 8 |
| Brip1 | 617 | 234 | 0.379 | BRCA1 interacting protein C-terminal helicase 1 |
| Bst1 | 6889 | 3236 | 0.470 | bone marrow stromal cell antigen 1 |
| Btd | 8719 | 1965 | 0.225 | biotinidase |
| C1qtnf6 | 4182 | 1924 | 0.460 | C1q and tumor necrosis factor related protein 6 |
| C1r | 65083 | 28526 | 0.438 | complement component 1, r subcomponent |
| Calhm2 | 1652 | 820 | 0.497 | calcium homeostasis modulator 2 |
| Calml4 | 734 | 142 | 0.193 | calmodulin-like 4 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|----------------|--------|------------------|---------------------|---|
| Casq1 | 1168 | 362 | 0.310 | calsequestrin 1 (fast-twitch, skeletal muscle) |
| Cav1 | 63744 | 18433 | 0.289 | caveolin 1, caveolae protein |
| Ccdc167 | 501 | 242 | 0.483 | coiled-coil domain containing 167 |
| Ccdc28b | 1663 | 622 | 0.374 | coiled coil domain containing 28B |
| Ccdc99 | 695 | 324 | 0.467 | coiled-coil domain containing 99 |
| Ccl19 | 1771 | 820 | 0.463 | chemokine (C-C motif) ligand 19 |
| Ccl2 | 36358 | 11268 | 0.310 | chemokine (C-C motif) ligand 2 |
| Ccna2 | 2610 | 826 | 0.316 | cyclin A2 |
| Ccnb1 | 1342 | 455 | 0.339 | cyclin B1 |
| Ccnb2 | 1269 | 402 | 0.316 | cyclin B2 |
| Ccne1 | 609 | 208 | 0.342 | cyclin E1 |
| Ccnyl1 | 1184 | 422 | 0.356 | cyclin Y-like 1 |
| Cd1d1 | 617 | 307 | 0.497 | CD1d1 molecule |
| Cd302 | 6339 | 2539 | 0.401 | CD302 molecule |
| Cd36 | 1209 | 239 | 0.198 | CD36 molecule (thrombospondin receptor) |
| Cd3eap | 2226 | 1010 | 0.454 | CD3e molecule, epsilon associated protein |
| Cd48 | 622 | 309 | 0.497 | Cd48 molecule |
| Cdc20 | 2435 | 1144 | 0.470 | cell division cycle 20 homolog |
| Cdc42bpg | 1510 | 704 | 0.467 | CDC42 binding protein kinase gamma (DMPK-like) |
| Cdc42ep5 | 5043 | 2504 | 0.497 | CDC42 effector protein (Rho GTPase binding) 5 |
| Cdc45 | 1641 | 523 | 0.319 | cell division cycle 45 homolog |
| Cdca3 | 5078 | 1296 | 0.255 | cell division cycle associated 3 |
| Cdk2 | 724 | 331 | 0.457 | cyclin dependent kinase 2 |
| Cdkn2c | 1771 | 820 | 0.463 | cyclin-dependent kinase inhibitor 2C (p18, inhibits CDK4) |
| Cebpd | 42348 | 12077 | 0.285 | CCAAT/enhancer binding protein (C/EBP), delta |
| Cenpf | 739 | 229 | 0.310 | centromere protein F |
| Cenpj | 1499 | 714 | 0.476 | centromere protein J |
| Cenpq | 592 | 254 | 0.429 | centromere protein Q |
| Cenpw | 1734 | 609 | 0.351 | centromere protein W |
| Cep55 | 2369 | 584 | 0.247 | centrosomal protein 55 |
| Ces1a | 7804 | 1226 | 0.157 | carboxylesterase 1A |
| Ces1d | 3875 | 146 | 0.038 | carboxylesterase 1D |
| Cfap100 | 15608 | 7538 | 0.483 | cilia and flagella associated protein 100 |
| Cfh | 1641 | 724 | 0.441 | complement factor H |
| Cisd2 | 1510 | 744 | 0.493 | CDGSH iron sulfur domain 2 |
| Ckap4 | 2557 | 1218 | 0.476 | cytoskeleton-associated protein 4 |
| Cklf | 1795 | 461 | 0.257 | chemokine-like factor |
| Clec11a | 617 | 147 | 0.238 | C-type lectin domain family 11, member A |
| Clmp | 680 | 311 | 0.457 | CXADR-like membrane protein |
| Cog8 | 1574 | 760 | 0.483 | component of oligomeric golgi complex 8 |
| Col12a1 | 3083 | 1468 | 0.476 | collagen, type XII, alpha 1 |
| Col14a1 | 484 | 108 | 0.224 | collagen, type XIV, alpha 1 |
| Col1a1 | 26068 | 5442 | 0.209 | collagen, type I, alpha 1 |
| Col1a2 | 172951 | 72214 | 0.418 | collagen, type I, alpha 2 |
| Col3a1 | 57849 | 4738 | 0.082 | collagen, type III, alpha 1 |
| Col5a1 | 6794 | 2778 | 0.409 | collagen, type V, alpha 1 |
| Col6a1 | 6654 | 3040 | 0.457 | collagen, type VI, alpha 1 |
| Col6a2 | 22381 | 9608 | 0.429 | collagen, type VI, alpha 2 |
| Commd1 | 12766 | 6165 | 0.483 | copper metabolism (Murr1) domain containing 1 |
| Cotl1 | 3902 | 1176 | 0.301 | coactosin-like 1 |
| Cox6b1 | 14563 | 6295 | 0.432 | cytochrome c oxidase subunit 6B1 |
| Cox7a2 | 22073 | 10441 | 0.473 | cytochrome c oxidase subunit VIIa polypeptide 2 |
| Cox7b | 15181 | 6841 | 0.451 | cytochrome c oxidase subunit VIIb |
| Cr1l | 21321 | 9947 | 0.467 | complement component (3b/4b) receptor 1-like |
| Crip2 | 55878 | 11585 | 0.207 | cysteine-rich protein 2 |
| Crtap | 1168 | 556 | 0.476 | cartilage associated protein |
| Cryl1 | 1046 | 388 | 0.371 | crystallin, lambda 1 |
| Csgalnact1 | 709 | 237 | 0.334 | chondroitin sulfate N-acetylgalactosaminyltransferase 1 |
| Csrp2 | 685 | 274 | 0.401 | cysteine and glycine-rich protein 2 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|----------|--------|------------------|---------------------|--|
| Ctf1 | 592 | 278 | 0.470 | cardiotrophin 1 |
| Ctsh | 2684 | 1342 | 0.500 | cathepsin H |
| Ctu1 | 1734 | 803 | 0.463 | cytosolic thiouridylase subunit 1 homolog |
| Ctxn1 | 508 | 211 | 0.415 | cortexin 1 |
| Cx3cl1 | 128375 | 25355 | 0.198 | chemokine (C-X3-C motif) ligand 1 |
| Cxcl1 | 44453 | 11505 | 0.259 | chemokine (C-X-C motif) ligand 1 (melanoma growth stim. activity, α) |
| Cxcl12 | 74245 | 24322 | 0.328 | chemokine (C-X-C motif) ligand 12 |
| Cxcl3 | 5634 | 2721 | 0.483 | chemokine (C-X-C motif) ligand 3 |
| Cxcr7 | 3169 | 1152 | 0.363 | chemokine (C-X-C motif) receptor 7 |
| Cyb5r3 | 11505 | 5634 | 0.490 | cytochrome b5 reductase 3 |
| Cybas3 | 2210 | 955 | 0.432 | cytochrome b, ascorbate dependent 3 |
| Cyhr1 | 4068 | 1278 | 0.314 | cysteine and histidine rich 1 |
| Cyp4a8 | 27746 | 10297 | 0.371 | cytochrome P450, family 4, subfamily a, polypeptide 8 |
| Cyth3 | 8719 | 3126 | 0.358 | cytohesin 3 |
| Da1-10 | 11191 | 4124 | 0.369 | Da1-10-like |
| Daam1 | 2180 | 1010 | 0.463 | dishevelled associated activator of morphogenesis 1 |
| Dcn | 26616 | 11666 | 0.438 | decorin |
| Ddx46 | 898 | 419 | 0.467 | DEAD (Asp-Glu-Ala-Asp) box polypeptide 46 |
| Ddx52 | 1370 | 653 | 0.476 | DEAD (Asp-Glu-Ala-Asp) box polypeptide 52 |
| Depp1 | 2353 | 776 | 0.330 | DEPP1, autophagy regulator |
| Dexi | 2937 | 1243 | 0.423 | dexamethasone-induced transcript |
| Dhodh | 1380 | 605 | 0.438 | dihydroorotate dehydrogenase (quinone) |
| Dhrs1 | 7858 | 2369 | 0.301 | dehydrogenase/reductase (SDR family) member 1 |
| Dhx9 | 2469 | 787 | 0.319 | DEAH (Asp-Glu-Ala-His) box polypeptide 9 |
| Dlgap5 | 2120 | 1038 | 0.490 | discs, large (Drosophila) homolog-associated protein 5 |
| Dnajc10 | 3616 | 1734 | 0.480 | DnaJ (Hsp40) homolog, subfamily C, member 10 |
| Dnase111 | 6608 | 3126 | 0.473 | deoxyribonuclease 1-like 1 |
| Dpep1 | 14766 | 7082 | 0.480 | dipeptidase 1 (renal) |
| Dpep2 | 512 | 146 | 0.285 | dipeptidase 2 |
| Dpp8 | 5293 | 2521 | 0.476 | dipeptidylpeptidase 8 |
| Dse | 929 | 440 | 0.473 | dermatan sulfate epimerase |
| Dsel | 588 | 292 | 0.497 | dermatan sulfate epimerase-like |
| Dusp6 | 13401 | 6295 | 0.470 | dual specificity phosphatase 6 |
| Dut | 1924 | 719 | 0.374 | deoxyuridine triphosphatase |
| E2f1 | 2150 | 942 | 0.438 | E2F transcription factor 1 |
| Ech1 | 6427 | 2665 | 0.415 | enoyl CoA hydratase 1, peroxisomal |
| Eci2 | 4360 | 1820 | 0.418 | enoyl-Coenzyme A delta isomerase 2 |
| Edem2 | 455 | 208 | 0.457 | ER degradation enhancer, mannosidase alpha-like 2 |
| Edn1 | 898 | 218 | 0.243 | endothelin 1 |
| Ehd2 | 3769 | 1795 | 0.476 | EH-domain containing 2 |
| Eln | 3902 | 449 | 0.115 | elastin |
| Elov6 | 2226 | 1082 | 0.486 | ELOVL family member 6, elongation of long chain fatty acids (yeast) |
| Emlin1 | 23822 | 9476 | 0.398 | elastin microfibril interfacer 1 |
| Emx2 | 2702 | 1201 | 0.444 | empty spiracles homeobox 2 |
| Ephb6 | 1820 | 765 | 0.420 | Eph receptor B6 |
| Epn3 | 1218 | 280 | 0.230 | epsin 3 |
| Epyc | 11037 | 449 | 0.041 | epiphycan |
| Ereg | 1184 | 584 | 0.493 | epiregulin |
| Erp29 | 4421 | 1898 | 0.429 | endoplasmic reticulum protein 29 |
| Espl1 | 765 | 267 | 0.349 | extra spindle pole bodies homolog 1 |
| Extl2 | 478 | 204 | 0.426 | exostoses (multiple)-like 2 |
| Fam180a | 523 | 90 | 0.172 | family with sequence similarity 180, member A |
| Fam25a | 1176 | 431 | 0.366 | family with sequence similarity 25, member A |
| Fam43a | 2062 | 760 | 0.369 | family with sequence similarity 43, member A |
| Fam57b | 1305 | 648 | 0.497 | family with sequence similarity 57, member B |
| Fam83d | 630 | 201 | 0.319 | family with sequence similarity 83, member D |
| Fasn | 6700 | 2628 | 0.392 | fatty acid synthase |
| Fat4 | 2288 | 771 | 0.337 | FAT tumor suppressor homolog 4 |
| Faxdc2 | 2353 | 1067 | 0.454 | fatty acid hydroxylase domain containing 2 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|--------------|-------|------------------|---------------------|--|
| Fbln5 | 3214 | 695 | 0.216 | fibulin 5 |
| Fbxo21 | 2048 | 1017 | 0.497 | F-box protein 21 |
| Fbxo23 | 2721 | 719 | 0.264 | F-box only protein 23 |
| Fbxw9 | 680 | 340 | 0.500 | F-box and WD repeat domain containing 9 |
| Fcgbpl1 | 484 | 236 | 0.486 | Fc fragment of IgG binding protein-like 1 |
| Fdps | 12417 | 5557 | 0.448 | farnesyl diphosphate synthase |
| Fibin | 12944 | 3397 | 0.262 | fin bud initiation factor homolog |
| Fkbp7 | 10016 | 3641 | 0.363 | FK506 binding protein 7 |
| Fkrp | 1038 | 410 | 0.395 | fukutin related protein |
| Fmo3 | 724 | 181 | 0.250 | flavin containing monooxygenase 3 |
| Foxf1 | 553 | 198 | 0.358 | forkhead box F1 |
| Foxm1 | 1003 | 455 | 0.454 | forkhead box M1 |
| Foxo4 | 1003 | 471 | 0.470 | forkhead box O4 |
| Fut8 | 910 | 347 | 0.382 | fucosyltransferase 8 (alpha (1,6) fucosyltransferase) |
| Fxyd1 | 1885 | 549 | 0.291 | FXD domain-containing ion transport regulator 1 |
| Fzd1 | 4068 | 1722 | 0.423 | frizzled family receptor 1 |
| Gale | 605 | 296 | 0.490 | UDP-galactose-4-epimerase |
| Galnt11 | 820 | 271 | 0.330 | UDP-N-acetyl- α -D-galactos.:polypeptide N-acetylgalactos.transfer.11 |
| Galnt16 | 1333 | 622 | 0.467 | polypeptide N-acetylgalactosaminyltransferase 16 |
| Galnt2 | 2876 | 996 | 0.346 | UDP-N-acetyl- α -D-galactos.:polypeptide N-acetylgalactos.transfer. 2 |
| Gas1 | 49667 | 4973 | 0.100 | growth arrest-specific 1 |
| Gas6 | 30786 | 11268 | 0.366 | growth arrest specific 6 |
| Gchfr | 14362 | 4673 | 0.325 | GTP cyclohydrolase I feedback regulator |
| Gemin4 | 653 | 294 | 0.451 | gem (nuclear organelle) associated protein 4 |
| Ggh | 4240 | 1663 | 0.392 | gamma-glutamyl hydrolase (folypolygammaglutamyl hydrolase) |
| Gins1 | 1458 | 377 | 0.259 | GINS complex subunit 1 (Psf1 homolog) |
| Gja4 | 760 | 350 | 0.460 | gap junction protein, alpha 4 |
| Glipr1 | 18433 | 6937 | 0.376 | GLI pathogenesis-related 1 |
| Glrx1 | 7033 | 3191 | 0.454 | glutaredoxin 1 |
| Gls2 | 2077 | 1003 | 0.483 | glutaminase 2 (liver, mitochondrial) |
| Glt8d1 | 2721 | 1017 | 0.374 | glycosyltransferase 8 domain containing 1 |
| Glt8d2 | 1003 | 360 | 0.358 | glycosyltransferase 8 domain containing 2 |
| Gltpt | 5293 | 2521 | 0.476 | glycolipid transfer protein |
| Glul | 1090 | 461 | 0.423 | glutamate-ammonia ligase |
| Gna14 | 3259 | 246 | 0.075 | guanine nucleotide binding protein, alpha 14 |
| Gpr89b | 2048 | 962 | 0.470 | G protein-coupled receptor 89 |
| Gpsm1 | 8481 | 2452 | 0.289 | G-protein signaling modulator 1 |
| Gpsm2 | 2916 | 1278 | 0.438 | G-protein signaling modulator 2 |
| Gpx7 | 7697 | 2006 | 0.261 | glutathione peroxidase 7 |
| Grem1 | 65536 | 26616 | 0.406 | gremlin 1 |
| Gsn | 26987 | 12161 | 0.451 | gelsolin |
| Gsta3 | 63744 | 24662 | 0.387 | glutathione S-transferase A3 |
| Gsta4 | 19756 | 8079 | 0.409 | glutathione S-transferase alpha 4 |
| Gsta5 | 25006 | 8964 | 0.358 | glutathione S-transferase Yc2 subunit |
| Gsta5 | 2647 | 989 | 0.374 | glutathione S-transferase alpha 5 |
| Gsta6 | 1060 | 355 | 0.334 | glutathione S-transferase alpha 6 |
| Gstm1 | 3350 | 1663 | 0.497 | glutathione S-transferase mu 1 |
| Gstm2 | 6747 | 1687 | 0.250 | glutathione S-transferase mu 2 |
| Gstm3 | 709 | 300 | 0.423 | glutathione S-transferase, mu 7 |
| Gstm5 | 2610 | 1184 | 0.454 | glutathione S-transferase, mu 5 |
| Gusb | 2091 | 553 | 0.264 | glucuronidase, beta |
| H2afx | 534 | 261 | 0.490 | H2A histone family, member X |
| Hadh | 11037 | 3083 | 0.279 | hydroxyacyl-CoA dehydrogenase |
| Hapln3 | 855 | 405 | 0.473 | hyaluronan and proteoglycan link protein 3 |
| Hexim1 | 5793 | 2369 | 0.409 | hexamethylene bis-acetamide inducible 1 |
| Hmgb3 | 592 | 226 | 0.382 | high mobility group box 3 |
| Hmgcr | 600 | 220 | 0.366 | 3-hydroxy-3-methylglutaryl-CoA reductase |
| Hmgcs1 | 12503 | 4270 | 0.342 | 3-hydroxy-3-methylglutaryl-CoA synthase 1 (soluble) |
| Hopx | 592 | 194 | 0.328 | HOP homeobox |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|--------------|--------|------------------|---------------------|--|
| Hp | 2740 | 771 | 0.281 | haptoglobin |
| Hs6st1 | 425 | 174 | 0.409 | heparan sulfate 6-O-sulfotransferase 1 |
| Hsbp1 | 12678 | 5557 | 0.438 | heat shock factor binding protein 1 |
| Hsd12 | 584 | 278 | 0.476 | hydroxysteroid dehydrogenase like 2 |
| Hspa8 | 156956 | 73732 | 0.470 | heat shock protein 8 |
| Hyal2 | 6794 | 3061 | 0.451 | hyaluronoglucosaminidase 2 |
| Idi1 | 2759 | 1090 | 0.395 | isopentenyl-diphosphate delta isomerase 1 |
| Ids | 5367 | 2353 | 0.438 | iduronate 2-sulfatase |
| Igf2r | 2628 | 898 | 0.342 | insulin-like growth factor 2 receptor |
| Il11ra1 | 15076 | 4421 | 0.293 | interleukin 11 receptor, alpha chain 1 |
| Il34 | 1351 | 217 | 0.160 | interleukin 34 |
| Incenp | 1992 | 676 | 0.339 | inner centromere protein |
| Isy1 | 1552 | 765 | 0.493 | ISY1 splicing factor homolog |
| Isyna1 | 1846 | 609 | 0.330 | inositol-3-phosphate synthase 1 |
| Itga1 | 9153 | 2978 | 0.325 | integrin, alpha 1 |
| Itga10 | 526 | 263 | 0.500 | integrin, alpha 10 |
| Itga8 | 676 | 258 | 0.382 | integrin, alpha 8 |
| Itgb5 | 13777 | 4360 | 0.316 | integrin, beta 5 |
| Itgbl1 | 22381 | 5008 | 0.224 | integrin, beta-like 1 |
| Izumo4 | 809 | 377 | 0.467 | IZUMO family member 4 |
| Jpt1 | 14766 | 6383 | 0.432 | Jupiter microtubule associated homolog 1 |
| Jup | 729 | 307 | 0.420 | junction plakoglobin |
| Kazald1 | 40063 | 5518 | 0.138 | Kazal-type serine peptidase inhibitor domain 1 |
| Kcnk2 | 5914 | 2435 | 0.412 | potassium channel, subfamily K, member 2 |
| Kdelc2 | 9345 | 4640 | 0.497 | KDEL (Lys-Asp-Glu-Leu) containing 2 |
| Kdelr3 | 942 | 440 | 0.467 | KDEL (Lys-Asp-Glu-Leu) endopl.reticulum protein retention receptor 3 |
| Kif11 | 1380 | 680 | 0.493 | kinesin family member 11 |
| Kif20a | 4040 | 1017 | 0.252 | kinesin family member 20A |
| Kif23 | 1641 | 648 | 0.395 | kinesin family member 23 |
| Kifc1 | 1370 | 592 | 0.432 | kinesin family member C1 |
| KIFC2 | 1024 | 383 | 0.374 | kinesin family member C2 |
| Kitlg | 9345 | 2837 | 0.304 | KIT ligand |
| Klhl36 | 666 | 290 | 0.435 | kelch-like 36 |
| Kpna2 | 10441 | 2702 | 0.259 | karyopherin alpha 2 |
| Kprp | 815 | 372 | 0.457 | keratinocyte proline-rich protein |
| Krtap16-5 | 734 | 300 | 0.409 | keratin associated protein 16-5 |
| Krtap21-2 | 657 | 300 | 0.457 | keratin associated protein 21-2 |
| Laptm4a | 9410 | 4330 | 0.460 | lysosomal protein transmembrane 4 alpha |
| Laptm4b | 2798 | 1314 | 0.470 | lysosomal protein transmembrane 4 beta |
| Lbh | 1144 | 505 | 0.441 | limb bud and heart development |
| Lc17 | 218913 | 107204 | 0.490 | myosin, light polypeptide 6, alkali, smooth and non-muscle-like |
| Leprel4 | 6339 | 2684 | 0.423 | leprecan-like 4 |
| Lgals1 | 104998 | 34160 | 0.325 | lectin, galactoside-binding, soluble, 1 |
| LOC100125364 | 2487 | 1144 | 0.460 | hypothetical protein LOC100125364 |
| LOC287274 | 3717 | 1808 | 0.486 | sedlin-like |
| LOC497848 | 1031 | 452 | 0.438 | hypothetical LOC497848 |
| LOC499219 | 3956 | 1607 | 0.406 | hypothetical protein LOC499219 |
| LOC500227 | 592 | 249 | 0.420 | hypothetical gene supported by BC079424 |
| LOC500846 | 4673 | 2272 | 0.486 | hypothetical protein LOC500846 |
| LOC500959 | 6081 | 2665 | 0.438 | triosephosphate isomerase |
| LOC688459 | 3717 | 1795 | 0.483 | hypothetical protein LOC688459 |
| LOC689574 | 26432 | 12331 | 0.467 | hypothetical protein LOC689574 |
| Lox | 7281 | 3083 | 0.423 | lysyl oxidase |
| Loxl1 | 7181 | 2195 | 0.306 | lysyl oxidase-like 1 |
| Lpar6 | 1060 | 458 | 0.432 | lysophosphatidic acid receptor 6 |
| Lrif1 | 2837 | 1389 | 0.490 | ligand dependent nuclear receptor interacting factor 1 |
| Lrp11 | 2557 | 1017 | 0.398 | low density lipoprotein receptor-related protein 11 |
| Lum | 7697 | 576 | 0.075 | lumican |
| Lurap11 | 434 | 168 | 0.387 | leucine rich adaptor protein 1-like |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|------------|--------|------------------|---------------------|---|
| Lypla2 | 9878 | 4211 | 0.426 | lysophospholipase 2 |
| Lztf1l | 471 | 208 | 0.441 | leucine zipper transcription factor-like 1 |
| Maged2 | 5833 | 2226 | 0.382 | melanoma antigen, family D, 2 |
| Manba | 1965 | 771 | 0.392 | mannosidase, beta A, lysosomal |
| March2 | 16613 | 7697 | 0.463 | membrane-associated ring finger (C3HC4) 2 |
| Marcksl1 | 5673 | 2837 | 0.500 | MARCKS-like 1 |
| Mbtps1 | 14869 | 6985 | 0.470 | membrane-bound transcription factor peptidase, site 1 |
| Mcm3 | 1209 | 508 | 0.420 | minichromosome maintenance complex component 3 |
| Mcm3 | 4608 | 1710 | 0.371 | minichromosome maintenance complex component 3 |
| Mcm5 | 792 | 317 | 0.401 | minichromosome maintenance complex component 5 |
| Mcm6 | 596 | 251 | 0.420 | minichromosome maintenance complex component 6 |
| Me1 | 4068 | 1209 | 0.297 | malic enzyme 1, NADP(+)-dependent, cytosolic |
| Med11 | 2452 | 1184 | 0.483 | mediator complex subunit 11 |
| Med18 | 1399 | 609 | 0.435 | mediator complex subunit 18 |
| Med23 | 849 | 410 | 0.483 | mediator complex subunit 23 |
| Medag | 1808 | 809 | 0.448 | mesenteric estrogen-dependent adipogenesis |
| Melk | 617 | 251 | 0.406 | maternal embryonic leucine zipper kinase |
| Meox2 | 8841 | 1924 | 0.218 | mesenchyme homeobox 2 |
| Mesdc2 | 3743 | 1846 | 0.493 | mesoderm development candidate 2 |
| Mex3b | 413 | 194 | 0.470 | mex3 homolog B |
| Mgarp | 1965 | 724 | 0.369 | mitochondria-localized glutamic acid-rich protein |
| Mgat1 | 5634 | 2592 | 0.460 | mannosyl (α -1,3-)-glycoprotein β -1,2-N-acetylglucosaminyltransferase |
| Mgst3 | 2210 | 313 | 0.142 | microsomal glutathione S-transferase 3 |
| Mif4gd | 5713 | 2385 | 0.418 | MIF4G domain containing |
| Mms22l | 929 | 416 | 0.448 | MMS22-like, DNA repair protein |
| Mogat2 | 443 | 159 | 0.358 | monoacylglycerol O-acyltransferase 2 |
| Mon1b | 719 | 338 | 0.470 | MON1 homolog b |
| Mphosph6 | 2257 | 1017 | 0.451 | M phase phosphoprotein 6 |
| Mrc2 | 739 | 254 | 0.344 | mannose receptor, C type 2 |
| mrpl11 | 8364 | 3444 | 0.412 | mitochondrial ribosomal protein L11 |
| Mrps12 | 5914 | 2817 | 0.476 | mitochondrial ribosomal protein S12 |
| Mrps17 | 4576 | 1458 | 0.319 | mitochondrial ribosomal protein S17 |
| Mrps21 | 11037 | 4300 | 0.390 | mitochondrial ribosomal protein S21 |
| Mrps21l | 2020 | 898 | 0.444 | mitochondrial ribosomal protein S21-like |
| Mrvi1 | 6608 | 1017 | 0.154 | murine retrovirus integration site 1 homolog |
| Ms4a7 | 481 | 154 | 0.321 | membrane-spanning 4-domains, subfamily A, member 7 |
| Mtbp | 1675 | 648 | 0.387 | MDM2 binding protein |
| Mvd | 4482 | 1951 | 0.435 | mevalonate (diphospho) decarboxylase |
| Mxd4 | 2304 | 936 | 0.406 | Max dimerization protein 4 |
| Mybl2 | 516 | 165 | 0.321 | myeloblastosis oncogene-like 2 |
| Mydgf | 10587 | 5113 | 0.483 | myeloid-derived growth factor |
| Myh8 | 9027 | 2504 | 0.277 | myosin, heavy chain 8, skeletal muscle, perinatal |
| Myhc | 7591 | 1978 | 0.261 | myosin, heavy polypeptide 1, skeletal muscle, adult |
| Myl6 | 152664 | 73223 | 0.480 | myosin, light chain 6, alkali, smooth muscle and non-muscle |
| Mylk | 3956 | 1641 | 0.415 | myosin light chain kinase |
| Mylk3 | 501 | 236 | 0.470 | myosin light chain kinase 3 |
| Mzf1 | 917 | 428 | 0.467 | myeloid zinc finger 1 |
| Narf | 2647 | 1296 | 0.490 | nuclear prelamin A recognition factor |
| Ncaph | 1859 | 798 | 0.429 | non-SMC condensin I complex, subunit H |
| Nck2 | 1992 | 729 | 0.366 | NCK adaptor protein 2 |
| Ndc80 | 3104 | 1105 | 0.356 | NDC80 homolog, kinetochore complex component |
| Nde1 | 3616 | 1574 | 0.435 | nudE nuclear distribution gene E homolog 1 |
| Ndrp2 | 2978 | 1136 | 0.382 | N-myc downstream regulated gene 2 |
| Ndrp4 | 5673 | 1596 | 0.281 | N-myc downstream regulated gene 4 |
| Ndufa4 | 17682 | 7281 | 0.412 | NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 4 |
| Nelf | 12417 | 5634 | 0.454 | nasal embryonic LHRH factor |
| Nfkbiz | 560 | 234 | 0.418 | nuclear factor κ light polypeptide gene enhancer in B-cells inhibitor, ζ |
| Nid2 | 4421 | 838 | 0.189 | nidogen 2 |
| Nmrk1,Nrk1 | 1924 | 478 | 0.248 | nicotinamide riboside kinase 1 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------------|--------|------------------|---------------------|--|
| Nnat | 1261 | 214 | 0.170 | neuronatin |
| Nr2f1 | 530 | 211 | 0.398 | nuclear receptor subfamily 2, group F, member 1 |
| Nr2f2 | 4270 | 1783 | 0.418 | nuclear receptor subfamily 2, group F, member 2 |
| Ns5atp9 | 1060 | 292 | 0.275 | NS5A (hepatitis C virus) transactivated protein 9 |
| Nsun4 | 1168 | 564 | 0.483 | NOP2/Sun domain family, member 4 |
| Nudt1 | 949 | 208 | 0.219 | nudix (nucleoside diphosphate linked moiety X)-type motif 1 |
| Nudt12 | 861 | 410 | 0.476 | nudix (nucleoside diphosphate linked moiety X)-type motif 12 |
| Nudt14 | 1795 | 771 | 0.429 | nudix (nucleoside diphosphate linked moiety X)-type motif 14 |
| Nudt15 | 1992 | 572 | 0.287 | nudix (nucleoside diphosphate linked moiety X)-type motif 15 |
| Nuf2 | 1024 | 491 | 0.480 | NUF2, NDC80 kinetochore complex component, homolog |
| Nxn | 407 | 153 | 0.376 | nucleoredoxin |
| Oat | 24834 | 10960 | 0.441 | ornithine aminotransferase |
| Oaz2 | 27939 | 11829 | 0.423 | ornithine decarboxylase antizyme 2 |
| Obfc1 | 4640 | 2304 | 0.497 | oligonucleotide/oligosaccharide-binding fold containing 1 |
| Ogn | 29944 | 5367 | 0.179 | osteoglycin |
| Ogt | 2077 | 666 | 0.321 | O-linked N-acetylglucosamine transferase |
| Olfml1 | 2048 | 388 | 0.189 | olfactomedin-like 1 |
| Olfml3 | 42939 | 19484 | 0.454 | olfactomedin-like 3 |
| Omd | 11191 | 215 | 0.019 | osteomodulin |
| Osr2 | 695 | 296 | 0.426 | odd-skipped related 2 |
| P3h1 | 11268 | 5008 | 0.444 | prolyl 3-hydroxylase 1 |
| Papss2 | 929 | 422 | 0.454 | 3'-phosphoadenosine 5'-phosphosulfate synthase 2 |
| Patz1 | 1924 | 929 | 0.483 | POZ (BTB) and AT hook containing zinc finger 1 |
| Pcdh19 | 1859 | 724 | 0.390 | protocadherin 19 |
| Pcdhac2 | 2062 | 549 | 0.266 | protocadherin alpha subfamily C, 2 |
| Pcdhb19 | 1563 | 274 | 0.176 | protocadherin beta 19 |
| Pcdhga7 | 20311 | 10156 | 0.500 | protocadherin gamma subfamily A, 7 |
| Pcolce | 198668 | 96618 | 0.486 | procollagen C-endopeptidase enhancer |
| Pdgfra | 32094 | 6985 | 0.218 | platelet derived growth factor receptor, alpha polypeptide |
| Pdgfrl | 1563 | 402 | 0.257 | platelet-derived growth factor receptor-like |
| Pdk2 | 2062 | 936 | 0.454 | pyruvate dehydrogenase kinase, isozyme 2 |
| Pdp1 | 3397 | 1082 | 0.319 | pyruvate dehydrogenase phosphatase catalytic subunit 1 |
| Pfkm | 4012 | 1468 | 0.366 | phosphofructokinase, muscle |
| Phf19 | 2006 | 699 | 0.349 | PHD finger protein 19 |
| Pik3r1 | 2210 | 820 | 0.371 | phosphoinositide-3-kinase, regulatory subunit 1 (alpha) |
| Pimreg | 2896 | 1184 | 0.409 | PICALM interacting mitotic regulator |
| Pip5k1c | 3468 | 1399 | 0.403 | phosphatidylinositol-4-phosphate 5-kinase, type I, gamma |
| Pla2g16 | 1136 | 413 | 0.363 | phospholipase A2, group XVI |
| Pla2g2a | 719 | 146 | 0.203 | phospholipase A2, group IIA (platelets, synovial fluid) |
| Plk1 | 4300 | 1596 | 0.371 | polo-like kinase 1 |
| Pls3 | 3591 | 1641 | 0.457 | plastin 3 |
| Pnn | 1783 | 855 | 0.480 | pinin, desmosome associated protein |
| Pnrc1 | 1758 | 671 | 0.382 | proline-rich nuclear receptor coactivator 1 |
| Podnl1 | 576 | 126 | 0.219 | podocan-like 1 |
| Pofut2 | 3795 | 1531 | 0.403 | protein O-fucosyltransferase 2 |
| Polr3gl | 2937 | 1399 | 0.476 | polymerase (RNA) III (DNA directed) polypeptide G-like |
| Pomgnt2 | 592 | 276 | 0.467 | protein O-linked mannose N-acetylglucosaminyltransferase.2 (beta 1,4-) |
| Pon2 | 5221 | 1808 | 0.346 | paraoxonase 2 |
| Ppa2 | 7486 | 3717 | 0.497 | pyrophosphatase (inorganic) 2 |
| Ppap2b | 2574 | 820 | 0.319 | phosphatidic acid phosphatase type 2B |
| Ppih | 917 | 391 | 0.426 | peptidylprolyl isomerase H (cyclophilin H) |
| Ppp2r3b | 3566 | 1783 | 0.500 | protein phosphatase 2, regulatory subunit B", beta |
| Ppt1 | 10226 | 4905 | 0.480 | palmitoyl-protein thioesterase 1 |
| Prdx4 | 6937 | 3304 | 0.476 | peroxiredoxin 4 |
| Prelp | 6517 | 3083 | 0.473 | proline/arginine-rich end leucine-rich repeat protein |
| Prpf4b | 1428 | 653 | 0.457 | PRP4 pre-mRNA processing factor 4 homolog B |
| Prss23 | 13970 | 4451 | 0.319 | protease, serine, 23 |
| Psen2 | 5257 | 2226 | 0.423 | presenilin 2 |
| Psemb10 | 17805 | 7132 | 0.401 | proteasome (prosome, macropain) subunit, beta type 10 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------------|--------|------------------|---------------------|--|
| Psmc4 | 2288 | 1003 | 0.438 | proteasome (prosome, macropain) activator subunit 4 |
| Ptn | 1136 | 130 | 0.114 | pleiotrophin |
| Ptprf | 18690 | 8422 | 0.451 | protein tyrosine phosphatase, receptor type, F |
| Ptprs | 1278 | 592 | 0.463 | protein tyrosine phosphatase, receptor type, S |
| Ptrhd1 | 2684 | 942 | 0.351 | peptidyl-tRNA hydrolase domain containing 1 |
| Pttg1 | 12246 | 4451 | 0.363 | pituitary tumor-transforming 1 |
| Ptx3 | 949 | 335 | 0.354 | pentraxin 3, long |
| Purb | 3397 | 1342 | 0.395 | purine rich element binding protein B |
| Rab26 | 1698 | 605 | 0.356 | RAB26, member RAS oncogene family |
| Rad54l | 580 | 242 | 0.418 | RAD54 like |
| Rbfox1 | 1885 | 410 | 0.218 | RNA binding protein, fox-1 homolog 1 |
| Rbm12 | 1938 | 468 | 0.241 | RNA binding motif protein 12 |
| Rbp1 | 43238 | 16962 | 0.392 | retinol binding protein 1, cellular |
| Rcn3 | 2702 | 1252 | 0.463 | reticulocalbin 3, EF-hand calcium binding domain |
| Reck | 5480 | 2077 | 0.379 | reversion-inducing-cysteine-rich protein with kazal motifs |
| Rfc3 | 3019 | 1458 | 0.483 | replication factor C (activator 1) 3 |
| RGD1306227 | 639 | 282 | 0.441 | similar to 4833420G17Rik protein |
| RGD1307929 | 18433 | 8481 | 0.460 | similar to CG14967-PA |
| RGD1309534 | 455 | 226 | 0.497 | similar to RIKEN cDNA 4931406C07 |
| RGD1311946 | 4153 | 1287 | 0.310 | similar to RIKEN cDNA 1810055G02 |
| RGD1561381 | 2062 | 294 | 0.143 | similar to microsomal glutathione S-transferase 3 |
| Rgma | 9742 | 2876 | 0.295 | RGM domain family, member A |
| Romo1 | 41765 | 16613 | 0.398 | reactive oxygen species modulator 1 |
| Rpa3 | 1924 | 644 | 0.334 | replication protein A3 |
| Rrm1-ps1 | 729 | 362 | 0.497 | ribonucleotide reductase M1, pseudogene 1 |
| Rrm2 | 17560 | 5997 | 0.342 | ribonucleotide reductase M2 |
| Rspo1 | 3421 | 1370 | 0.401 | R-spondin 1 |
| Rsu1 | 9742 | 4837 | 0.497 | Ras suppressor protein 1 |
| Rtl8b | 5753 | 2856 | 0.497 | retrotransposon Gag like 8B |
| S100a1 | 4330 | 1438 | 0.332 | S100 calcium binding protein A1 |
| S100a10 | 75805 | 36107 | 0.476 | S100 calcium binding protein A10 |
| S100a13 | 5008 | 2419 | 0.483 | S100 calcium binding protein A13 |
| S100a4 | 269514 | 72214 | 0.268 | S100 calcium-binding protein A4 |
| Sap25 | 630 | 274 | 0.435 | Sin3A-associated protein 25 |
| Sapcd2 | 3616 | 1607 | 0.444 | suppressor APC domain containing 2 |
| Scara3 | 8780 | 2150 | 0.245 | scavenger receptor class A, member 3 |
| Scara5 | 13216 | 5185 | 0.392 | scavenger receptor class A, member 5 (putative) |
| Scarf2 | 4771 | 1520 | 0.319 | scavenger receptor class F, member 2 |
| Scd | 20032 | 8306 | 0.415 | stearoyl-CoA desaturase (delta-9-desaturase) |
| Scfd2 | 1278 | 488 | 0.382 | sec1 family domain containing 2 |
| Scp2 | 30362 | 7383 | 0.243 | sterol carrier protein 2 |
| Sdf2 | 11585 | 4421 | 0.382 | stromal cell derived factor 2 |
| Selenom | 14067 | 6383 | 0.454 | selenoprotein M |
| Sept4 | 410 | 202 | 0.493 | septin 4 |
| Sertad3 | 820 | 292 | 0.356 | SERTA domain containing 3 |
| Sertad4 | 17199 | 3769 | 0.219 | SERTA domain containing 4 |
| Sesn3 | 771 | 236 | 0.306 | sestrin 3 |
| Sfrp2 | 792 | 169 | 0.213 | secreted frizzled-related protein 2 |
| Sgcb | 1820 | 855 | 0.470 | sarcoglycan, beta (dystrophin-associated glycoprotein) |
| Sgk196 | 2320 | 815 | 0.351 | protein kinase-like protein Sgk196 |
| Shcbp1 | 704 | 317 | 0.451 | SHC binding and spindle associated 1 |
| Sipa1 | 1872 | 781 | 0.418 | signal-induced proliferation-associated 1 |
| Ska1 | 867 | 355 | 0.409 | spindle and kinetochore associated complex subunit 1 |
| Skp1 | 7858 | 3666 | 0.467 | S-phase kinase-associated protein 1 |
| Slc16a3 | 5873 | 2241 | 0.382 | solute carrier family 16, member 3 (monocarboxylic acid transporter 4) |
| Slc22a17 | 3541 | 1541 | 0.435 | solute carrier family 22, member 17 |
| Slc35a2 | 1951 | 832 | 0.426 | solute carrier family 35 (UDP-galactose transporter), member A2 |
| Slc35f5 | 861 | 380 | 0.441 | solute carrier family 35, member F5 |
| Slc44a1 | 962 | 365 | 0.379 | solute carrier family 44, member 1 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|----------------|--------|------------------|---------------------|---|
| Slc6a6 | 1226 | 209 | 0.171 | solute carrier family 6 (neurotransmitter transporter, taurine), member 6 |
| Slirp | 6608 | 1938 | 0.293 | SRA stem-loop interacting RNA binding protein |
| Smarcc2 | 1872 | 440 | 0.235 | SWI/SNF rel., matrix assoc., actin dep.reg.chromat., subfam.c, memb.2 |
| Smim7 | 9216 | 3191 | 0.346 | small integral membrane protein 7 |
| Snn | 3517 | 1641 | 0.467 | stannin |
| Snx14 | 3641 | 1687 | 0.463 | sorting nexin 14 |
| Sod3 | 40905 | 15393 | 0.376 | superoxide dismutase 3, extracellular |
| Sox4 | 13308 | 6608 | 0.497 | SRY (sex determining region Y)-box 4 |
| Spag5 | 2304 | 1067 | 0.463 | sperm associated antigen 5 |
| Sparc | 150562 | 65083 | 0.432 | secreted protein, acidic, cysteine-rich (osteonectin) |
| Spc25 | 1641 | 755 | 0.460 | SPC25, NDC80 kinetochore complex component, homolog |
| Spint2 | 8599 | 4124 | 0.480 | serine peptidase inhibitor, Kunitz type, 2 |
| Sptbn1 | 2062 | 734 | 0.356 | spectrin, beta, non-erythrocytic 1 |
| Srgn | 1652 | 560 | 0.339 | serglycin |
| Srp14 | 10514 | 5078 | 0.483 | signal recognition particle 14 |
| Srpx | 17080 | 4124 | 0.241 | sushi-repeat-containing protein, X-linked |
| Srpx2 | 36107 | 8422 | 0.233 | sushi-repeat-containing protein, X-linked 2 |
| Srrt | 1031 | 443 | 0.429 | serrate, RNA effector molecule |
| Srsf5 | 9608 | 4390 | 0.457 | serine/arginine-rich splicing factor 5 |
| Srsf6 | 4240 | 1911 | 0.451 | serine/arginine-rich splicing factor 6 |
| Ssc5d | 4211 | 1370 | 0.325 | scavenger receptor cysteine rich domain containing (5 domains) |
| St14 | 724 | 267 | 0.369 | suppression of tumorigenicity 14 (colon carcinoma) |
| St3gal5 | 2369 | 843 | 0.356 | ST3 beta-galactoside alpha-2,3-sialyltransferase 5 |
| Stard4 | 410 | 124 | 0.301 | StAR-related lipid transfer (START) domain containing 4 |
| Stard9 | 2402 | 1193 | 0.497 | StAR-related lipid transfer domain containing 9 |
| Sub1 | 10735 | 5149 | 0.480 | SUB1 homolog (S. cerevisiae) |
| Sult1a1 | 671 | 105 | 0.157 | sulfotransferase family, cytosolic, 1A, phenol-preferring, member 1 |
| Sumf2 | 1323 | 365 | 0.275 | sulfatase modifying factor 2 |
| Suox | 556 | 224 | 0.403 | sulfite oxidase |
| Surf4 | 12331 | 6165 | 0.500 | surfeit 4 |
| Tacc3 | 6985 | 2320 | 0.332 | transforming, acidic coiled-coil containing protein 3 |
| Tax1bp3 | 25355 | 8964 | 0.354 | Tax1 (human T-cell leukemia virus type I) binding protein 3 |
| Tcaf1 | 765 | 360 | 0.470 | TRPM8 channel-associated factor 1 |
| Tcf19 | 10885 | 3517 | 0.323 | transcription factor 19 |
| Tcp11l2 | 955 | 234 | 0.245 | t-complex 11 (mouse) like 2 |
| Tect2 | 1820 | 666 | 0.366 | tectonic 2 |
| Tex19 | 3083 | 1361 | 0.441 | testis expressed 19 |
| Thbs2 | 519 | 145 | 0.279 | thrombospondin 2 |
| Tk1 | 4390 | 1168 | 0.266 | thymidine kinase 1, soluble |
| Tlr2 | 6889 | 2288 | 0.332 | toll-like receptor 2 |
| Tm4sf1 | 38166 | 3421 | 0.090 | transmembrane 4 L six family member 1 |
| Tmem123 | 1978 | 976 | 0.493 | transmembrane protein 123 |
| Tmem2 | 437 | 185 | 0.423 | transmembrane protein 2 |
| Tmem204 | 923 | 355 | 0.384 | transmembrane protein 204 |
| Tmem216 | 449 | 201 | 0.448 | transmembrane protein 216 |
| Tmem50b | 1323 | 413 | 0.312 | transmembrane protein 50B |
| Tnfrsf11b | 2487 | 556 | 0.224 | tumor necrosis factor receptor superfamily, member 11b |
| Tnfrsf9 | 455 | 162 | 0.356 | tumor necrosis factor receptor superfamily, member 9 |
| Tnn | 1468 | 505 | 0.344 | tenascin N |
| Top2a | 1978 | 584 | 0.295 | topoisomerase (DNA) II alpha |
| Topbp1 | 787 | 375 | 0.476 | topoisomerase (DNA) II binding protein 1 |
| Tpx2 | 580 | 290 | 0.500 | TPX2, microtubule-associated, homolog |
| Tradd | 7132 | 3566 | 0.500 | TNFRSF1A-associated via death domain |
| Traf4af1 | 7281 | 1489 | 0.204 | TRAF4 associated factor 1 |
| Trak2 | 4124 | 1687 | 0.409 | trafficking protein, kinesin binding 2 |
| Trib2 | 1097 | 191 | 0.174 | tribbles homolog 2 |
| Trim25 | 4096 | 1820 | 0.444 | tripartite motif-containing 25 |
| Tspan2 | 1128 | 523 | 0.463 | tetraspanin 2 |
| Tspan7 | 5480 | 2320 | 0.423 | tetraspanin 7 |

Table S6B continued

| Symbol | Fb | Fb+AS-Tspan8-TEX | Fb+AS-Tsp8-TEX : Fb | GeneName |
|---------|-------|------------------|---------------------|--|
| Ttc30b | 1734 | 685 | 0.395 | tetratricopeptide repeat domain 30B |
| Ttyh3 | 2020 | 617 | 0.306 | tweety homolog 3 |
| Tuba1a | 38431 | 7804 | 0.203 | tubulin, alpha 1A |
| Tubb4b | 74245 | 25888 | 0.349 | tubulin, beta 4B class Ivb |
| Tubb5 | 70728 | 34877 | 0.493 | tubulin, beta 5 class I |
| Txnip | 3214 | 714 | 0.222 | thioredoxin interacting protein |
| Ube2c | 1911 | 803 | 0.420 | ubiquitin-conjugating enzyme E2C |
| Ubl5 | 1924 | 891 | 0.463 | ubiquitin-like 5 |
| Ufc1 | 5518 | 2721 | 0.493 | ubiquitin-fold modifier conjugating enzyme 1 |
| Uqcrh | 31216 | 7913 | 0.253 | ubiquinol-cytochrome c reductase hinge protein |
| Vamp1 | 1144 | 498 | 0.435 | vesicle-associated membrane protein 1 |
| Vcam1 | 37381 | 4012 | 0.107 | vascular cell adhesion molecule 1 |
| Vkorc1 | 28526 | 13873 | 0.486 | vitamin K epoxide reductase complex, subunit 1 |
| Vof16 | 744 | 338 | 0.454 | ischemia related factor vof-16 |
| Vwa1 | 1746 | 809 | 0.463 | von Willebrand factor A domain containing 1 |
| Wdr53 | 3259 | 1629 | 0.500 | WD repeat domain 53 |
| Xdh | 3083 | 1333 | 0.432 | xanthine dehydrogenase |
| Yipf2 | 1380 | 534 | 0.387 | Yip1 domain family, member 2 |
| Ylpm1 | 630 | 307 | 0.486 | YLP motif containing 1 |
| Yrdc | 4330 | 1872 | 0.432 | yrdC domain containing |
| Zbtb8os | 505 | 249 | 0.493 | zinc finger and BTB dom.containing 8 opposite strand, pseudogene 1 |
| Zc3h11a | 4360 | 1992 | 0.457 | zinc finger CCCH-type containing 11A |
| Zdhhc16 | 13682 | 6794 | 0.497 | zinc finger, DHHC-type containing 16 |
| Zfp846 | 468 | 234 | 0.500 | zinc finger protein 846 |
| Znf24 | 1629 | 639 | 0.392 | zinc finger protein 191 |
| Zscan2 | 739 | 367 | 0.497 | zinc finger and SCAN domain containing 2 |
| Zscan21 | 4124 | 1859 | 0.451 | zinc finger and SCAN domain containing 21 |

Table S6C

AS-Tspan8-TEX coculture-induced EC mRNA upregulation

| Symbol ^a | EC+Tspan8- | | GeneName |
|---------------------|------------|-------|--|
| | EC | TEX | |
| Aarsd1 | 179 | 457 | 2.561 alanyl-tRNA synthetase domain containing 1 |
| Abca16 | 172 | 807 | 4.680 ATP-binding cassette, subfamily A (ABC1), member 16 |
| Adap1 | 357 | 898 | 2.516 ArfGAP with dual PH domains 1 |
| Add3 | 885 | 2361 | 2.667 adducin 3 (gamma) |
| Agps | 1607 | 4716 | 2.935 alkylglycerone phosphate synthase |
| Ahdc1 | 1060 | 2198 | 2.073 AT hook, DNA binding motif, containing 1 |
| Ahi1 | 609 | 1548 | 2.543 Abelson helper integration site 1 |
| Akap17b | 207 | 423 | 2.047 A kinase (PRKA) anchor protein 17B |
| Apol9a | 2195 | 4889 | 2.227 apolipoprotein L 9a |
| Arhgap28 | 622 | 1687 | 2.713 Rho GTPase activating protein 28 |
| Arid3a | 530 | 2548 | 4.807 AT rich interactive domain 3A (Bright like) |
| Atp8b2 | 317 | 835 | 2.631 Atpase, class I, type 8B, member 2 |
| Bcl11a | 377 | 1746 | 4.627 B-cell CLL/lymphoma 11A (zinc finger protein) |
| Bf | 1226 | 3920 | 3.196 complement factor B |
| Bicc1 | 488 | 1113 | 2.282 bicaudal C homolog 1 |
| Bmp2 | 1046 | 2136 | 2.043 bone morphogenetic protein 2 |
| Bpifb6 | 150 | 428 | 2.849 BPI fold containing family B, member 6 |
| C2cd4b | 195 | 471 | 2.412 C2 calcium-dependent domain containing 4B |
| C4b | 6700 | 13732 | 2.049 complement component 4B (Chido blood group) |
| Cables1 | 1687 | 3568 | 2.115 Cdk5 and Abl enzyme substrate 1 |
| Caly | 153 | 434 | 2.832 calcyon neuron-specific vesicular protein |
| Ccdc69 | 177 | 592 | 3.341 coiled-coil domain containing 69 |
| Ccl19 | 326 | 662 | 2.028 chemokine (C-C motif) ligand 19 |
| Cd24 | 278 | 1000 | 3.593 CD24 molecule |
| CD244 | 150 | 447 | 2.980 similar to transmembrane NK cell receptor 2B4 |
| Cd99l2 | 1218 | 6548 | 5.378 similar to MIC2 like 1 |
| Cdkn1a | 11829 | 32094 | 2.713 cyclin-dependent kinase inhibitor 1A |
| Cep250 | 6208 | 20455 | 3.295 centrosomal protein 250 |
| Ces1a | 1226 | 2897 | 2.363 carboxylesterase 1A |
| Chd2 | 685 | 1511 | 2.205 chromodomain helicase DNA binding protein 2 |
| Chm | 333 | 1185 | 3.556 choroideremia (Rab escort protein 1) |
| Clec12a | 181 | 479 | 2.648 C-type lectin domain family 12, member A |
| Clrn2 | 217 | 555 | 2.558 clarin 2 |
| Cotl1 | 3421 | 7281 | 2.129 coactosin-like 1 (Dictyostelium) |
| Cox6b2 | 3717 | 9126 | 2.455 cytochrome c oxidase subunit VIb polypeptide 2 |
| Cplx2 | 622 | 1287 | 2.071 complexin 2 |
| Cpne5 | 254 | 524 | 2.060 copine V |
| Csn1s1 | 223 | 455 | 2.042 casein alpha s1 |
| Ctnnal1 | 1938 | 10886 | 5.618 catenin (cadherin associated protein), alpha-like 1 |
| Cx3cl1 | 17805 | 41621 | 2.338 chemokine (C-X3-C motif) ligand 1 |
| Cx3cr1 | 1128 | 2423 | 2.147 chemokine (C-X3-C motif) receptor 1 |
| Cxcl10 | 2647 | 7860 | 2.970 chemokine (C-X-C motif) ligand 10 |
| Dcaf6 | 530 | 1176 | 2.219 DDB1 and CUL4 associated factor 6 |
| Dcun1d1 | 3875 | 9027 | 2.330 DCN1, defective in cullin neddylation 1, domain containing 1 |
| Dgkd | 205 | 425 | 2.071 diacylglycerol kinase, delta |
| Duox1 | 286 | 676 | 2.362 dual oxidase 1 |
| Dusp16 | 242 | 496 | 2.049 dual specificity phosphatase 16 |
| Eef1a2 | 750 | 1655 | 2.207 eukaryotic translation elongation factor 1 alpha 2 |
| Eln | 5043 | 12767 | 2.532 elastin |
| Emx1 | 278 | 747 | 2.685 empty spiracles homeobox 1 |
| Eral1 | 484 | 1141 | 2.355 Era (G-protein)-like |
| Ermard | 498 | 1072 | 2.153 ER membrane-associated RNA degradation |
| Etv3 | 879 | 3541 | 4.028 ets variant 3 |
| Fam131b | 1113 | 2312 | 2.078 family with sequence similarity 131, member B |
| Fam13a | 221 | 532 | 2.403 family with sequence similarity 13, member A |
| Flad1 | 393 | 847 | 2.152 flavin adenine dinucleotide synthetase |
| Fosb | 714 | 2548 | 3.568 FBJ osteosarcoma oncogene B |
| Foxd4 | 205 | 458 | 2.235 forkhead box D4 |

Table S6C continued

| Symbol | EC | EC+Tspan8- TEX | EC+Tspan8- TEX : EC | GeneName |
|---------------------------|-------|-------------------|------------------------|--|
| Foxe1 | 4513 | 16787 | 3.719 | forkhead box E1 (thyroid transcription factor 2) |
| Fzd6 | 271 | 787 | 2.908 | frizzled family receptor 6 |
| Gal3st4 | 405 | 1399 | 3.458 | galactose-3-O-sulfotransferase 4 |
| Galp | 170 | 400 | 2.354 | galanin-like peptide |
| Gfra2 | 177 | 712 | 4.014 | GDNF family receptor alpha 2 |
| Grin2d | 22073 | 57451 | 2.603 | glutamate receptor, ionotropic, N-methyl D-aspartate 2D |
| H2afj | 21321 | 60939 | 2.858 | H2A histone family, member J |
| Hdc | 320 | 942 | 2.949 | histidine decarboxylase |
| Hes7 | 21028 | 66451 | 3.160 | hairy and enhancer of split 7 |
| Hist1h1a | 347 | 1283 | 3.695 | histone cluster 1, H1a |
| Hist1h1b | 2837 | 11465 | 4.042 | histone cluster 1, H1b |
| Hist1h1d | 3743 | 14416 | 3.852 | histone cluster 1, H1d |
| Hist1h2af | 21174 | 64414 | 3.042 | histone cluster 1, H2af |
| Hist1h2ai | 260 | 683 | 2.630 | histone cluster 1, H2ai |
| Hist1h2ail1 | 13970 | 34173 | 2.446 | histone cluster 1, H2ai-like |
| Hist1h2ak | 24492 | 82953 | 3.387 | histone cluster 1, H2ak |
| Hist1h2an | 229 | 748 | 3.264 | histone cluster 1, H2an |
| Hist1h2bd | 1184 | 2713 | 2.290 | histone cluster 1, H2bm |
| Hist1h3c | 1201 | 2788 | 2.322 | histone cluster 2, H3c |
| Hist1h4b | 2469 | 5386 | 2.181 | histone cluster 1, H4b |
| Hist2h2ac | 9947 | 30684 | 3.085 | histone cluster 2, H2ac |
| Hist2h3c2 | 2195 | 6540 | 2.979 | histone cluster 2, H3c2 |
| Hist4h4 | 2759 | 7513 | 2.723 | histone cluster 2, H4 |
| Hmx1 | 36358 | 95624 | 2.630 | H6 family homeobox 1 |
| Homer2 | 419 | 1168 | 2.790 | homer homolog 2 (Drosophila) |
| Hoxa11-as/nc ^b | 545 | 1479 | 2.713 | similar to hypothetical gene supported by BC025338 |
| Hpn | 910 | 1997 | 2.194 | hepsin |
| Ifi35 | 2048 | 4285 | 2.092 | interferon-induced protein 35 |
| Ifit3 | 186 | 752 | 4.042 | interferon-induced protein with tetratricopeptide repeats 3 |
| Il1f10 | 662 | 1705 | 2.577 | interleukin 1 family, member 10 |
| Il34 | 1305 | 2731 | 2.092 | interleukin 34 |
| Iqgap1 | 1428 | 2999 | 2.100 | IQ motif containing GTPase activating protein 1 |
| Irf7 | 1380 | 4514 | 3.272 | interferon regulatory factor 7 |
| Isg15 | 1541 | 9027 | 5.856 | ISG15 ubiquitin-like modifier |
| Jsrp1 | 1176 | 3456 | 2.938 | junctional sarcoplasmic reticulum protein 1 |
| Kcnma1 | 149 | 497 | 3.331 | potassium large conductance calcium-activated channel, subfamily M, member 1 |
| Kcp | 568 | 1671 | 2.941 | kielin/chordin-like protein |
| Krtap1-1 | 182 | 609 | 3.343 | keratin associated protein 1-3-like |
| Lbp | 560 | 1230 | 2.196 | lipopolysaccharide binding protein |
| LOC100366216 | 201 | 437 | 2.175 | nuclear antigen Sp100-like |
| LOC298139 | 269 | 939 | 3.496 | similar to RIKEN cDNA 2310003M01 |
| LOC301748 | 228 | 556 | 2.446 | similar to RIKEN cDNA 1700001E04 |
| LOC678708 | 505 | 1641 | 3.250 | similar to histone 1, H2ai |
| LOC680322 | 28329 | 93329 | 3.294 | similar to Histone H2A type 1 |
| LOC680578 | 324 | 1031 | 3.181 | similar to C56C10.7a |
| LOC684998 | 252 | 568 | 2.248 | hypothetical protein LOC684998 |
| LOC689727 | 523 | 1065 | 2.036 | hypothetical protein LOC689727 |
| LOC690415 | 471 | 1218 | 2.586 | hypothetical protein LOC690415 |
| LOC690435 | 165 | 449 | 2.714 | hypothetical protein LOC690435 |
| Loxl2 | 1499 | 3226 | 2.152 | lysyl oxidase-like 2 |
| Ly6g5c | 671 | 2675 | 3.987 | lymphocyte antigen 6 complex, locus G5C |
| Mag | 234 | 648 | 2.770 | myelin-associated glycoprotein |
| Map3k20 | 413 | 830 | 2.010 | sterile alpha motif and leucine zipper containing kinase AZK |
| Medag | 1060 | 3405 | 3.212 | similar to RIKEN cDNA 6330406I15 |
| Mmp15 | 15393 | 52876 | 3.435 | matrix metalloproteinase 15 |
| Mmp28 | 352 | 848 | 2.407 | matrix metalloproteinase 28 |
| Mmtag2 | 2048 | 4127 | 2.015 | similar to RIKEN cDNA 2310033P09 |
| Mras | 1144 | 2283 | 1.996 | muscle RAS oncogene homolog |
| Mx1 | 304 | 2236 | 7.343 | myxovirus (influenza virus) resistance 1 |

Table S6C continued

| Symbol | EC | EC+Tspan8- TEX | EC+Tspan8- TEX : EC | GeneName |
|---------------|-----------|---------------------------|--------------------------------|--|
| Napsa | 549 | 1305 | 2.379 | napsin A aspartic peptidase |
| Nes | 223 | 512 | 2.298 | nestin |
| Nr2f2 | 2385 | 4956 | 2.078 | nuclear receptor subfamily 2, group F, member 2 |
| Nrg4 | 150 | 441 | 2.938 | neuregulin 4 |
| Nsd2 | 338 | 907 | 2.686 | Wolf-Hirschhorn syndrome candidate 1 |
| Oas1a | 129 | 424 | 3.290 | 2'-5' oligoadenylate synthetase 1A |
| Oasl2 | 280 | 917 | 3.272 | 2'-5' oligoadenylate synthetase-like 2 |
| Olr143 | 161 | 490 | 3.046 | olfactory receptor 143 |
| Otx1 | 2916 | 10553 | 3.619 | orthodenticle homeobox 1 |
| Parp14 | 3281 | 7206 | 2.196 | poly (ADP-ribose) polymerase family, member 14 |
| Pcdhgc5 | 338 | 702 | 2.078 | protocadherin gamma c5 |
| Pdim5 | 3492 | 9092 | 2.603 | PDZ and LIM domain 5 |
| Pdx1 | 284 | 923 | 3.250 | pancreatic and duodenal homeobox 1 |
| Pdpx | 2180 | 4940 | 2.266 | pyridoxal (pyridoxine, vitamin B6) phosphatase |
| Pgbd5 | 202 | 468 | 2.313 | piggyBac transposable element derived 5 |
| Pgpep1 | 3281 | 6941 | 2.115 | pyroglutamyl-peptidase I |
| Pitx1 | 505 | 1014 | 2.008 | paired-like homeodomain 1 |
| Pla2g2a | 8780 | 23582 | 2.686 | phospholipase A2, group IIA (platelets, synovial fluid) |
| Pla2g2c | 185 | 534 | 2.889 | phospholipase A2, group IIC |
| Plk2 | 1144 | 2435 | 2.129 | polo-like kinase 2 |
| Polm | 7231 | 27678 | 3.828 | polymerase (DNA directed), mu |
| Polr1a | 220 | 748 | 3.401 | polymerase (RNA) I polypeptide A |
| Ppp1r14a | 568 | 1351 | 2.379 | protein phosphatase 1, regulatory (inhibitor) subunit 14A |
| Prkacb | 215 | 603 | 2.799 | protein kinase, cAMP dependent, catalytic, beta |
| Psd | 5713 | 23905 | 4.184 | pleckstrin and Sec7 domain containing |
| Psemb10 | 14766 | 30049 | 2.035 | proteasome (prosome, macropain) subunit, beta type 10 |
| Pth2 | 265 | 562 | 2.121 | parathyroid hormone 2 |
| Ptms | 23010 | 50186 | 2.181 | parathyrosin |
| Rai12 | 5518 | 12374 | 2.242 | retinoic acid induced 12 |
| Rara | 2020 | 4082 | 2.021 | retinoic acid receptor, alpha |
| Rassf2 | 2288 | 5077 | 2.219 | Ras association (RalGDS/AF-6) domain family member 2 |
| Rbmx | 1342 | 3328 | 2.480 | RNA binding motif protein, X-linked |
| Rbp1 | 19893 | 40909 | 2.056 | retinol binding protein 1, cellular |
| Rbp2 | 1846 | 3836 | 2.078 | retinol binding protein 2, cellular |
| Rc3h2 | 755 | 1538 | 2.037 | ring finger and CCCH-type domains 2 |
| Rftn1 | 709 | 1464 | 2.064 | raftlin lipid raft linker 1 |
| RGD1308117 | 1128 | 2369 | 2.100 | similar to 9930012K11Rik protein |
| RGD1310081 | 184 | 402 | 2.192 | similar to hypothetical protein FLJ13231 |
| RGD1561671 | 537 | 1829 | 3.403 | similar to RIKEN cDNA 2900010M23 |
| RGD1563034 | 347 | 1266 | 3.644 | similar to ETS domain transcript.factor ERF (Ets2 repr.factor) |
| Rnpepl1 | 1160 | 2320 | 2.000 | similar to arginyl aminopeptidase (aminopeptidase B)-like 1 |
| Rpph1 | 1243 | 4405 | 3.543 | RNA component of mitoch.RNA processing endoribonuclease |
| Rsad2 | 309 | 2402 | 7.781 | radical S-adenosyl methionine domain containing 2 |
| Rsph6a | 184 | 495 | 2.696 | radial spoke head 6 homolog A |
| Rtp4 | 704 | 2027 | 2.878 | receptor (chemosensory) transporter protein 4 |
| Sema5a | 596 | 1269 | 2.129 | sema dom., 7 thrombosp.rep., short cytopl.dom., semaphorin5A |
| Sema6c | 22694 | 61586 | 2.714 | sema dom., TM, cytopl. dom., semaphorin6C |
| Serpib7 | 898 | 2470 | 2.751 | serpin peptidase inhibitor, clade B (ovalbumin), member 7 |
| Sertad3 | 1046 | 2093 | 2.002 | SERTA domain containing 3 |
| Sesn3 | 288 | 588 | 2.040 | sestrin 3 |
| Sez6 | 164 | 440 | 2.676 | seizure related 6 homolog |
| Sfrp2 | 630 | 2203 | 3.494 | secreted frizzled-related protein 2 |
| Shbg | 8719 | 17936 | 2.057 | sex hormone binding globulin |
| Shisa8 | 474 | 1624 | 3.423 | shisa homolog 8 |
| Sin3a | 292 | 832 | 2.848 | SIN3 homolog A, transcription regulator |
| Sirpa | 239 | 503 | 2.107 | signal-regulatory protein alpha |
| Slc19a1 | 452 | 2183 | 4.831 | solute carrier family 19 (folate transporter), member 1 |
| Slc25a28 | 4973 | 10333 | 2.078 | solute carrier family 25, member 28 |
| Slc25a30 | 739 | 1515 | 2.049 | solute carrier family 25, member 30 |

Table S6C continued

| Symbol | EC | EC+Tspan8- TEX | EC+Tspan8- TEX : EC | GeneName |
|---------------|-----------|---------------------------|--------------------------------|--|
| Slc38a7 | 391 | 938 | 2.401 | solute carrier family 38, member 7 |
| Slc4a2 | 3929 | 8780 | 2.235 | solute carrier family 4 (anion exchanger), member 2 |
| Snhg11 | 2592 | 6040 | 2.330 | small nucleolar RNA host gene 11 |
| Sobp | 247 | 704 | 2.848 | sine oculis-binding protein homolog |
| Spsb4 | 6383 | 19620 | 3.074 | splA/ryanodine receptor domain and SOCS box containing 4 |
| Stat2 | 3083 | 7282 | 2.362 | signal transducer and activator of transcription 2 |
| Ston1 | 246 | 746 | 3.036 | stonin 1 |
| Taok3 | 335 | 926 | 2.761 | TAO kinase 3 |
| Tbx21 | 27939 | 73551 | 2.633 | T-box 21 |
| Tcp11x2 | 205 | 596 | 2.907 | similar to t-complex 11 protein |
| Tgm2 | 362 | 1485 | 4.101 | transglutaminase 2, C polypeptide |
| Tlx3 | 187 | 424 | 2.260 | T-cell leukemia, homeobox 3 |
| Tmem121 | 1075 | 2488 | 2.315 | transmembrane protein 121 |
| Tmem229b | 744 | 2238 | 3.007 | transmembrane protein 229B |
| Tmem47 | 6841 | 14811 | 2.165 | transmembrane protein 47 |
| Tpbgl | 12161 | 34043 | 2.799 | similar to trophoblast glycoprotein |
| Tprn | 491 | 1024 | 2.085 | taperin |
| Trim42 | 201 | 934 | 4.652 | tripartite motif-containing 42 |
| Tsen54 | 1499 | 3541 | 2.362 | tRNA splicing endonuclease 54 homolog |
| Tubb4a | 3984 | 11547 | 2.898 | tubulin, beta 4A class Iva |
| Uba7 | 372 | 1170 | 3.143 | ubiquitin-like modifier activating enzyme 7 |
| Uqcr11 | 18054 | 41485 | 2.298 | ubiquinol-cytochrome c reductase, complex III subunit XI |
| Usp18 | 329 | 867 | 2.639 | ubiquitin specific peptidase 18 |
| Usp2 | 1771 | 5257 | 2.969 | ubiquitin specific peptidase 2 |
| Usp42 | 843 | 1754 | 2.080 | ubiquitin specific peptidase 42 |
| Utrn | 215 | 557 | 2.585 | utrophin |
| Vom1r57 | 288 | 740 | 2.568 | vomer nasal 1 receptor 57 |
| Vom1r61 | 405 | 823 | 2.035 | vomer nasal 1 receptor 61 |
| Wdr37 | 254 | 532 | 2.092 | WD repeat domain 37 |
| Wfdc1 | 568 | 1999 | 3.519 | WAP four-disulfide core domain 1 |
| Wfdc21 | 580 | 1305 | 2.251 | WDM1 homolog |
| withdrawn | 431 | 873 | 2.028 | similar to hypothetical protein MGC13138 |
| Wnt7a | 170 | 425 | 2.497 | wingless-type MMTV integration site family, member 7A |
| Zbtb38 | 267 | 607 | 2.275 | zinc finger and BTB domain containing 38 |
| Zbtb7c | 214 | 450 | 2.107 | zinc finger and BTB domain containing 7C |
| Zbtb8b | 666 | 2558 | 3.839 | zinc finger and BTB domain containing 8b |
| Zdhhc14 | 284 | 707 | 2.488 | zinc finger, DHHC-type containing 14 |
| Zeb2 | 443 | 1136 | 2.567 | zinc finger E-box binding homeobox 2 |
| Zfp592 | 5914 | 15342 | 2.594 | zinc finger protein 592 |
| Zfp787 | 205 | 646 | 3.152 | zinc finger protein 787 |
| Znrf4 | 195 | 848 | 4.341 | zinc and ring finger 4 |

Table S6D

AS-Tspan8-TEX coculture-induced EC mRNA downregulation

| Symbol^a | EC | EC+Tspan8- TEX | EC+Tspan8- TEX : EC | GeneName |
|---------------------------|-----------|---------------------------|--------------------------------|---|
| Adam9 | 709 | 355 | 0.500 | ADAM metallopeptidase domain 9 |
| Adamts1 | 29738 | 8690 | 0.292 | ADAM metallopeptidase with thrombospondin type 1 motif, 1 |
| Ag2 | 605 | 301 | 0.497 | similar to LOC387763 protein |
| Ankrd1 | 657 | 246 | 0.374 | ankyrin repeat domain 1 |
| Arc | 699 | 183 | 0.262 | activity-regulated cytoskeleton-associated protein |
| Areg | 2336 | 547 | 0.234 | amphiregulin |
| Arf4 | 8364 | 4098 | 0.490 | ADP-ribosylation factor 4 |
| Arrdc4 | 458 | 176 | 0.385 | arrestin domain containing 4 |
| Atf3 | 478 | 234 | 0.490 | activating transcription factor 3 |
| Atf4 | 38431 | 16271 | 0.423 | activating transcript. factor 4 (tax-responsive enhancer element B67) |
| Atg12 | 505 | 248 | 0.491 | ATG12 autophagy related 12 homolog |
| Bmper | 530 | 203 | 0.383 | BMP-binding endothelial regulator |
| Btg2 | 6039 | 719 | 0.119 | BTG family, member 2 |
| Btg3 | 744 | 358 | 0.481 | BTG family, member 3 |
| Cacybp | 9281 | 4127 | 0.445 | calyculin binding protein |
| Ccdc112 | 584 | 281 | 0.481 | coiled-coil domain containing 112 |
| Ccl27 | 1978 | 952 | 0.481 | chemokine (C-C motif) ligand 27 |
| Ccn1 | 2120 | 1043 | 0.492 | cyclin L1 |
| Cda | 1885 | 885 | 0.470 | cytidine deaminase |
| Cdkn2aip | 617 | 288 | 0.467 | CDKN2A interacting protein |
| Ceacam4 | 929 | 377 | 0.406 | carcinoembryonic antigen-related cell adhesion molecule 10 |
| Csrnp1 | 942 | 336 | 0.357 | cysteine-serine-rich nuclear protein 1 |
| Cst6 | 695 | 199 | 0.286 | cystatin E/M |
| Ctxn3 | 2557 | 927 | 0.362 | cortixin 3 |
| Cyp3a9 | 3327 | 1218 | 0.366 | cytochrome P450, family 3, subfamily a, polypeptide 9 |
| Dars | 5330 | 2470 | 0.463 | aspartyl-tRNA synthetase |
| Diras1 | 1898 | 903 | 0.476 | DIRAS family, GTP-binding RAS-like 1 |
| Dusp1 | 1218 | 195 | 0.160 | dual specificity phosphatase 1 |
| Dusp22 | 630 | 205 | 0.325 | dual specificity phosphatase 22 |
| Dusp5 | 6841 | 2020 | 0.295 | dual specificity phosphatase 5 |
| Egr1 | 18179 | 7107 | 0.391 | early growth response 1 |
| Egr2 | 1675 | 283 | 0.169 | early growth response 2 |
| Eif2s2 | 2521 | 1075 | 0.426 | eukaryotic translation initiation factor 2, subunit 2 beta |
| Eif3e | 4738 | 1939 | 0.409 | eukaryotic translation initiation factor 3, subunit E |
| Eif4e | 1687 | 844 | 0.500 | eukaryotic translation initiation factor 4E |
| Eif4e3 | 1017 | 493 | 0.485 | eukaryotic translation initiation factor 4E family member 3 |
| Ero1l | 9281 | 4467 | 0.481 | ERO1-like |
| Errfi1 | 5713 | 2531 | 0.443 | ERBB receptor feedback inhibitor 1 |
| Fem1b | 867 | 431 | 0.497 | fem-1 homolog b |
| Fos | 7858 | 179 | 0.023 | FBJ osteosarcoma oncogene |
| Fosl1 | 6039 | 2798 | 0.463 | fos-like antigen 1 |
| Gbe1 | 452 | 222 | 0.490 | glucan (1,4-alpha-), branching enzyme 1 |
| Gdf15 | 1585 | 609 | 0.384 | growth differentiation factor 15 |
| Gpr88 | 695 | 347 | 0.499 | G-protein coupled receptor 88 |
| Hif1a | 826 | 213 | 0.258 | hypoxia-inducible factor 1, alpha subunit (transcription factor) |
| Higd1a | 787 | 389 | 0.495 | HIG1 hypoxia inducible domain family, member 1A |
| Iars | 5673 | 2639 | 0.465 | isoleucyl-tRNA synthetase |
| Id1 | 910 | 422 | 0.463 | inhibitor of DNA binding 1 |
| Ier2 | 28725 | 12810 | 0.446 | immediate early response 2 |
| Il13ra2 | 2665 | 1101 | 0.413 | interleukin 13 receptor, alpha 2 |
| Il1rl1 | 16271 | 5853 | 0.360 | interleukin 1 receptor-like 1 |
| Insig1 | 8023 | 3796 | 0.473 | insulin induced gene 1 |
| Klf10 | 6295 | 2675 | 0.425 | Kruppel-like factor 10 |
| Klf4 | 16728 | 8030 | 0.480 | Kruppel-like factor 4 (gut) |
| Kpna4 | 491 | 235 | 0.478 | karyopherin alpha 4 (importin alpha 3) |
| Lnk | 873 | 430 | 0.493 | limb and neural patterns |
| LOC100359930 | 512 | 195 | 0.381 | Cyp2s1 protein-like |
| LOC303590 | 488 | 201 | 0.412 | similar to cactin CG1676-PA |

Table S6D continued

| Symbol | EC | EC+Tspan8- TEX | EC+Tspan8- TEX : EC | GeneName |
|----------------|-------|-------------------|------------------------|---|
| LOC689959 | 648 | 306 | 0.471 | hypothetical protein LOC689959 |
| Met | 431 | 168 | 0.390 | met proto-oncogene |
| Morf4l2 | 8135 | 4054 | 0.498 | mortality factor 4 like 2 |
| Mthfd2 | 4153 | 2077 | 0.500 | methylenetetrahydrofolate dehydrog.2, -cyclohydrolase |
| Myc | 4096 | 1965 | 0.480 | myelocytomatosis oncogene |
| Nedd4 | 32768 | 16103 | 0.491 | neural precursor cell expressed, developmentally down-regulated 4 |
| Nfkbiz | 1105 | 454 | 0.411 | nuclear factor of κ light polypept. gene enhanc. in B-cells inhibitor, ζ |
| Nox1 | 1184 | 521 | 0.440 | NADPH oxidase 1 |
| Nr4a1 | 10960 | 1591 | 0.145 | nuclear receptor subfamily 4, group A, member 1 |
| Nr4a2 | 1235 | 350 | 0.284 | nuclear receptor subfamily 4, group A, member 2 |
| Nr4a3 | 501 | 145 | 0.289 | nuclear receptor subfamily 4, group A, member 3 |
| Nxph3 | 1629 | 644 | 0.395 | neurexophilin 3 |
| Oas1e | 695 | 307 | 0.443 | 2'-5' oligoadenylate synthetase 1E |
| Ovol1 | 505 | 215 | 0.426 | ovo-like 1(Drosophila) |
| Pdcd10 | 4837 | 2206 | 0.456 | programmed cell death 10 |
| Pdk1 | 1218 | 582 | 0.478 | pyruvate dehydrogenase kinase, isozyme 1 |
| Phlda1 | 750 | 324 | 0.433 | pleckstrin homology-like domain, family A, member 1 |
| Pls3 | 2702 | 1328 | 0.491 | plastin 3 |
| Plscr2 | 982 | 446 | 0.454 | phospholipid scramblase 2 |
| Pnrc1 | 1992 | 974 | 0.489 | proline-rich nuclear receptor coactivator 1 |
| Pnrc2 | 2628 | 1053 | 0.401 | proline-rich nuclear receptor coactivator 2 |
| Ppp1cb | 5955 | 2812 | 0.472 | protein phosphatase 1, catalytic subunit, beta isozyme |
| Psat1 | 17929 | 8339 | 0.465 | phosphoserine aminotransferase 1 |
| Psip1 | 867 | 422 | 0.487 | PC4 and SFRS1 interacting protein 1 |
| Psph | 1082 | 540 | 0.499 | phosphoserine phosphatase |
| Ptpn12 | 1296 | 557 | 0.429 | protein tyrosine phosphatase, non-receptor type 12 |
| Ptx3 | 4576 | 1878 | 0.410 | pentraxin 3, long |
| Rap1a | 7132 | 3304 | 0.463 | RAP1A, member of RAS oncogene family |
| Rbm3 | 14165 | 7085 | 0.500 | RNA binding motif (RNP1, RRM) protein 3 |
| Rcor1 | 760 | 363 | 0.478 | REST corepressor 1 |
| Rgs2 | 2180 | 429 | 0.197 | regulator of G-protein signaling 2 |
| Rsl24d1 | 1075 | 491 | 0.457 | ribosomal L24 domain containing 1 |
| Sacm1l | 879 | 374 | 0.425 | SAC1 suppressor of actin mutations 1-like |
| Sept7 | 7132 | 3252 | 0.456 | septin 7 |
| Serp1 | 4182 | 1687 | 0.403 | stress-associated endoplasmic reticulum protein 1 |
| Slc12a2 | 3769 | 1885 | 0.500 | solute carrier family 12 (sodium/potassium/chloride, member 2 |
| Slc30a4 | 873 | 334 | 0.382 | solute carrier family 30 (zinc transporter), member 4 |
| Slc6a4 | 1872 | 549 | 0.293 | solute carrier family 6 (neurotransmitter, serotonin), member 4 |
| Slc7a11 | 498 | 185 | 0.371 | solute carrier family 7 (anionic AA transporter light chain), memb.11 |
| Slc7a5 | 776 | 375 | 0.483 | solute carrier family 7 (amino acid transporter light chain), member 5 |
| Snx7 | 2957 | 1454 | 0.492 | sorting nexin 7 |
| Spcs3 | 5595 | 2666 | 0.476 | signal peptidase complex subunit 3 homolog |
| Spp1 | 27364 | 11952 | 0.437 | secreted phosphoprotein 1 |
| Sprr1a | 572 | 271 | 0.474 | small proline-rich protein 1A |
| Srxn1 | 8964 | 4436 | 0.495 | sulfiredoxin 1 |
| Tceal8 | 5257 | 2530 | 0.481 | transcription elongation factor A (SII)-like 8 |
| Tmem45a | 3984 | 1872 | 0.470 | transmembrane protein 45A |
| Trmt6 | 568 | 276 | 0.486 | tRNA methyltransferase 6 homolog |
| Vldlr | 1418 | 555 | 0.391 | very low density lipoprotein receptor |
| Vps35 | 3591 | 1520 | 0.423 | vacuolar protein sorting 35 homolog |
| Vsnl1 | 1243 | 570 | 0.459 | visinin-like 1 |
| Zdhhc2 | 832 | 402 | 0.484 | zinc finger, DHHC-type containing 2 |
| Zfp319 | 491 | 190 | 0.388 | zinc finger protein 319 |
| Zfp36 | 425 | 203 | 0.478 | zinc finger protein 36 |

^a red symbol: Fb and EC mRNA accordingly regulated by AS-TEX or AS-Tspan8-TEX, ^b nc: noncoding

Table S7

Altered miRNA recovery in TEX treated EC

| name ^a | EC | EC+AS- TEX | AS- TEX:EC ^b | name ^a | EC | EC+AS- Tspan8-TEX | AS-Tspan8- TEX:EC ^b |
|-------------------|------|---------------|----------------------------|-------------------|-------|----------------------|-----------------------------------|
| miR-7a | 233 | 419 | 1.80 | let-7i | 15429 | 23790 | 1.54 |
| miR-125a-3p | 290 | 577 | 1.99 | miR-1188-3p | 62 | 111 | 1.80 |
| miR-128 | 138 | 244 | 1.76 | miR-146b | 1437 | 3261 | 2.27 |
| miR-146a | 4669 | 7287 | 1.56 | miR-181a | 364 | 545 | 1.50 |
| miR-146b | 1437 | 3906 | 2.72 | miR-207 | 66 | 300 | 4.55 |
| miR-150 | 344 | 528 | 1.53 | miR-485 | 57 | 327 | 5.70 |
| miR-202 | 117 | 286 | 2.43 | miR-760-5p | 165 | 570 | 3.46 |
| miR-210 | 2321 | 3700 | 1.59 | miR-764 | 245 | 520 | 2.12 |
| miR-211 | 347 | 569 | 1.64 | | | | |
| miR-322 | 1472 | 2278 | 1.55 | | | | |
| miR-345-3p | 51 | 289 | 5.62 | | | | |
| miR-450a | 136 | 247 | 1.82 | | | | |
| miR-542-3p | 81 | 207 | 2.55 | | | | |
| name | EC | EC+AS- TEX | EC:AS- TEX | name | EC | EC+AS- Tspan8-TEX | EC:AS- Tspan8-TEX |
| miR-32 | 601 | 117 | 5.14 | miR-18a | 302 | 168 | 1.80 |
| miR-34c | 2630 | 1470 | 1.79 | miR-19a | 428 | 210 | 2.04 |
| miR-101a | 2067 | 1341 | 1.54 | miR-29b | 28045 | 16235 | 1.73 |
| miR-129 | 3654 | 1563 | 2.34 | miR-34b | 2492 | 1189 | 2.10 |
| miR-140 | 7105 | 3591 | 1.98 | miR-34c | 2630 | 1640 | 1.60 |
| miR-362 | 249 | 153 | 1.63 | miR-101a | 2067 | 1332 | 1.55 |
| miR-374 | 313 | 138 | 2.26 | miR-134 | 462 | 119 | 3.87 |
| miR-466b | 1715 | 720 | 2.38 | miR-140 | 7105 | 4181 | 1.70 |
| miR-466c | 1052 | 463 | 2.27 | miR-188 | 393 | 197 | 2.00 |
| miR-494 | 2733 | 1800 | 1.52 | miR-193 | 1042 | 429 | 2.43 |
| miR-500 | 596 | 360 | 1.66 | miR-211 | 347 | 199 | 1.74 |
| miR-672 | 384 | 86 | 4.48 | miR-212 | 390 | 102 | 3.83 |
| miR-1249 | 271 | 171 | 1.58 | miR-214 | 7667 | 3831 | 2.00 |
| | | | | miR-222 | 1694 | 1047 | 1.62 |
| | | | | miR-301a | 1143 | 557 | 2.05 |
| | | | | miR-362 | 249 | 163 | 1.52 |
| | | | | miR-494 | 2733 | 1576 | 1.73 |
| | | | | miR-1224 | 2183 | 1360 | 1.60 |
| | | | | miR-1249 | 271 | 98 | 2.76 |
| | | | | miR-3584-5p | 3975 | 1102 | 3.61 |

^a corresponding changes in miRNA expression in AS- and AS-Tspan8-TEX-treated EC are indicated in red.

^b 1.5-fold changes in miRNA signal strength were accepted as significant.

Table S8

Noncoding RNA in rat endothelial cells, fibroblasts and AS-Tspan8-TEX

| symbol | classif.¹ | GeneName |
|---------------|-----------------------------|---|
| AA926063 | nc | AA926063gene |
| Abhd11-as1 | nc | hypothetical protein LOC686120 |
| Aff1-as1 | as,coding | similar to hypothetical protein MGC26744 |
| Aoc2-ps1 | pseudo | amine oxidase, copper containing 2 (retina-specific), pseudogene 1 |
| Atp5h1 | pseudo | ATP synthase, H ⁺ transporting, mitochondrial Fo complex, subunit d-like 1 |
| CB741658 | nc | CB741658 gene |
| Cfl1 | pseudo | similar to Cofilin-1 (Cofilin, non-muscle isoform) |
| Clec6a-ps1 | pseudo | C-type lectin domain family 6, member A, pseudogene 1 |
| Cox6c-ps1 | pseudo | cytochrome c oxidase subunit VIc, pseudogene |
| Cyp3a85-ps | pseudo | cytochrome P450, family 3, subfamily a, polypeptide 85, pseudogene |
| Defb16-ps | pseudo | defensin beta 16 pseudogene |
| Dnmt3a-ps2 | pseudo | pink-eyed dilution-like |
| Dpp3l | pseudo | dipeptidylpeptidase 3-like |
| Dzip1-ps1 | pseudo | DAZ interacting protein 1, pseudogene 1 |
| E230034O05Rik | nc | E230034O05Rik gene |
| Fgfr1-ps1 | pseudo | fibroblast growth factor receptor 1, pseudogene 1 |
| Fsip2-ps1 | pseudo | fibrous sheath-interacting protein 2, pseudogene 1 |
| Gapdh-ps1 | pseudo | glyceraldehyde-3-phosphate dehydrogenase, pseudogene 1 |
| Gas5 | nc | growth arrest specific 5 |
| H19 | nc | H19, imprinted maternally expressed transcript (non-protein coding) |
| Hmgb1-ps2 | pseudo | high mobility group box 1, pseudogene 2 |
| Hmox2-ps1 | pseudo | heme oxygenase (decycling) 2, pseudogene 1 |
| Hoxa11-as | nc | similar to hypothetical gene supported by BC025338 |
| Hspd1-ps2 | pseudo | heat shock protein 1, pseudogene 2 |
| Hspd1-ps3 | pseudo | heat shock protein 1, pseudogene 3 |
| Ifi203-ps1 | pseudo | interferon activated gene 203, pseudogene 1 |
| LOC100359554 | pseudo | Cytochrome P450 2C26-like |
| LOC100361049 | pseudo | hypothetical protein LOC100361049 |
| LOC100362263 | pseudo | similar to Heat shock transcription factor, Y-linked |
| LOC100363290 | nc | hypothetical protein LOC100363290 |
| LOC100363736 | pseudo | ribosomal protein L19-like |
| LOC100364138 | pseudo | ferritin light chain 1-like |
| LOC100364957 | pseudo | RGD1560755 protein-like |
| LOC100365858 | pseudo | zinc finger CCCH type, antiviral 1-like |
| LOC100910558 | nc | uncharacterized LOC100910558 |
| LOC100912673 | pseudo | similar to High mobility group protein 1-like 10 (HMG-1L10) |
| LOC102547637 | nc | uncharacterized LOC102547637 |
| LOC102548134 | nc | hypothetical protein LOC690347 |
| LOC102550668 | pseudo | 60S ribosomal protein L21-like |
| LOC102551195 | pseudo | 60S ribosomal protein L5-like |
| LOC102552129 | pseudo | similar to Tubulin alpha-2 chain (Alpha-tubulin 2) |
| LOC102552394 | pseudo | Nucleoside 2-deoxyribosyltransferase domain containing protein RGD620382 |
| LOC102552870 | pseudo | 60S ribosomal protein L23a-like |
| LOC102554402 | pseudo | similar to High mobility group protein 1 (HMG-1) (Heparin-binding protein p30) |
| LOC102554715 | pseudo | similar to RIKEN cDNA 5031410I06 |
| LOC102554992 | pseudo | 60S ribosomal protein L29-like |
| LOC102555366 | pseudo | similar to Cofilin, non-muscle isoform (Cofilin-1) |
| LOC102556209 | nc | uncharacterized LOC102556209 |
| LOC103690331 | pseudo | similar to ribosomal protein L13 |
| LOC103690592 | nc | hypothetical protein LOC685569 |
| LOC103690796 | pseudo | 60S ribosomal protein L9-like |
| LOC103691298 | pseudo | similar to lysophospholipase I |
| LOC103691301 | pseudo | similar to olfactory receptor 1463 |
| LOC103691425 | pseudo | 60S ribosomal protein L7a pseudogene |
| LOC103691563 | pseudo | similar to ribosomal protein L31 |
| LOC103691840 | pseudo | similar to DNA polymerase epsilon subunit 4 |
| LOC103692072 | pseudo | similar to mKIAA2005 protein |
| LOC103692519 | pseudo | 60S ribosomal protein L9 pseudogene |
| LOC103693457 | pseudo | similar to ATPase, H ⁺ transporting, V1 subunit F |
| LOC103694291 | pseudo | similar to small nuclear ribonucleoprotein D3 |

Table S8 continued

| symbol | classif.¹ | GeneName |
|---------------|-----------------------------|--|
| LOC287004 | nc | Mg1 protein |
| LOC301725 | pseudo | similar to 60S ribosomal protein L35 |
| LOC301772 | pseudo | similar to Y-linked testis-specific protein |
| LOC301772 | pseudo | similar to Y-linked testis-specific protein |
| LOC303341 | pseudo | hypothetical LOC303341 |
| LOC303590 | pseudo | similar to cactin CG1676-PA |
| LOC304027 | pseudo | similar to NACHT, leucine rich repeat and PYD containing 4A |
| LOC310487 | pseudo | similar to purinergic receptor P2Y, G-protein coupled, 4 |
| LOC361963 | pseudo | similar to phosphoglycerate mutase (EC 5.4.2.1) B chain - rat |
| LOC362473 | pseudo | similar to Elongation factor 1-gamma (EF-1-gamma) (eEF-1B gamma) |
| LOC365444 | pseudo | similar to CGI-09 protein |
| LOC366449 | pseudo | hypothetical LOC366449 |
| LOC366632 | pseudo | similar to 40S ribosomal protein S6 |
| LOC366709 | pseudo | similar to prohibitin |
| LOC366979 | pseudo | hypothetical LOC366979 |
| LOC367050 | pseudo | similar to 60S ribosomal protein L35 |
| LOC497848 | pseudo | hypothetical LOC497848 |
| LOC497952 | pseudo | similar to Ubiquitin-associated protein 2-like |
| LOC498601 | nc | similar to cyclin B2 |
| LOC499023 | pseudo | similar to keratin complex 1, acidic, gene 18 |
| LOC500213 | pseudo | similar to T-box transcription factor TBX15 (T-box protein 15) (MmTBx8) |
| LOC500265 | pseudo | nucleoporin 50-like |
| LOC501810 | pseudo | similar to Leukosialin precursor (Sialophorin, Ly-48) (B cell different. antigen LP-3, CD43) |
| LOC502504 | nc | similar to CG11883-PB, isoform B |
| LOC502876 | pseudo | similar to protein phosphatase 1, regulatory subunit 15B |
| LOC679583 | pseudo | similar to UPF0197 protein C11orf10 homolog |
| LOC679586 | pseudo | similar to ATP synthase, H+ transporting, mitochondrial Fo complex, subunit G |
| LOC679899 | pseudo | similar to 40S ribosomal protein S20 |
| LOC680224 | pseudo | similar to Aspartate aminotransferase, mitochondrial precursor (Transaminase A) |
| LOC680590 | nc | hypothetical protein LOC680590 |
| LOC680635 | pseudo | similar to 40S ribosomal protein S10 |
| LOC680802 | pseudo | similar to Zinc finger protein 45 (BRC1744) |
| LOC680967 | pseudo | RAB1A-like protein-like |
| LOC681958 | pseudo | similar to Polycomb group RING finger protein 2 (DNA-binding Mel-18) (Zfp-144) |
| LOC683581 | nc | similar to ADP-ribosylation factor 7 |
| LOC683746 | pseudo | similar to thyroid autoantigen |
| LOC684399 | pseudo | similar to 60S ribosomal protein L29 (P23) |
| LOC685003 | pseudo | similar to Leydig cell tumor 10 kDa protein |
| LOC685176 | pseudo | similar to Spindlin-like protein 2 (SPIN-2) |
| LOC685262 | pseudo | similar to paired immunoglobulin-like type 2 receptor beta |
| LOC686096 | pseudo | hypothetical protein LOC686096 |
| LOC686151 | pseudo | similar to cell division cycle associated 5 |
| LOC687746 | pseudo | similar to Mitochondrial import inner membrane translocase subunit Tim17-B |
| LOC688539 | pseudo | similar to Fructose-bisphosphate aldolase A (Muscle-type aldolase) |
| LOC688562 | pseudo | similar to U1 small nuclear ribonucleoprotein C (U1 snRNP protein C) (U1C protein) (U1-C) |
| LOC688570 | pseudo | similar to butyrate-induced transcript 1 |
| LOC688874 | pseudo | similar to NEDD4-binding protein 1 (N4BP1) |
| LOC688948 | pseudo | similar to ribosomal protein S26 |
| LOC689316 | nc | hypothetical protein LOC689316 |
| LOC689435 | pseudo | similar to vomeronasal 2, receptor, 1 |
| LOC689459 | pseudo | similar to Cytochrome c, somatic |
| LOC689961 | pseudo | similar to ATP synthase lipid-binding protein, mitochondrial precursor |
| LOC690120 | nc | hypothetical protein LOC690120 |
| LOC690138 | pseudo | similar to UPF0197 protein C11orf10 homolog |
| LOC690269 | pseudo | hypothetical protein LOC690269 |
| LOC690350 | pseudo | similar to LSM7 homolog, U6 small nuclear RNA associated |
| LOC690840 | pseudo | similar to ribosomal protein L37 |
| LOC691797 | pseudo | similar to developmental pluripotency-associated 3 |
| Nutf2-ps1 | pseudo | similar to Nuclear transport factor 2 (NTF-2) |
| Olf1276-ps | pseudo | olfactory receptor Olf1276-like |
| Olf1740-ps | pseudo | olfactory receptor 10-like |

Table S8 continued

| symbol | classif.¹ | GeneName |
|---------------|-----------------------------|--|
| Olr366-ps | pseudo | thioredoxin-like 4-like |
| Pcdhgb2 | pseudo | protocadherin gamma subfamily B, 2 |
| Phb-ps1 | pseudo | similar to prohibitin |
| Pira2 | nc | paired-Ig-like receptor A2 |
| pramef20l | pseudo | similar to PRAME family member 8 |
| Prrc2c | pseudo | proline-rich coiled-coil 2C |
| Rexo111-ps1 | pseudo, cod. | similar to Transcription elongation factor B polypeptide 3 binding protein 1 |
| Rf11 | pseudo | similar to RING finger protein 11 (NEDD4 WW domain-binding protein 2) (Sid 1669) |
| RGD1306704 | nc | hypothetical LOC295483 |
| RGD1559513 | pseudo | similar to DEAD (Asp-Glu-Ala-Asp) box polypeptide 41 |
| RGD1559677 | pseudo | similar to cell surface receptor FDFACT |
| RGD1559743 | pseudo | similar to 40S ribosomal protein S16 |
| RGD1559747 | pseudo | similar to Zinc finger and SCAN domain containing protein 2 (Zinc finger protein 29) |
| RGD1559772 | pseudo | similar to Luc7 homolog (S. cerevisiae)-like |
| RGD1559859 | nc | RGD1559859 |
| RGD1559892 | pseudo | ribosomal protein L29 pseudogene |
| RGD1560208 | pseudo | similar to Farnesyl pyrophosphate synthetase (FPP synthetase) |
| RGD1560350 | pseudo | similar to proteasome subunit iota |
| RGD1560412 | pseudo | similar to Leukosialin precursor (Leucocyte sialoglycoprotein) |
| RGD1560648 | pseudo | similar to DJ-1 protein |
| RGD1560789 | pseudo | similar to ribosomal protein S2 |
| RGD1560815 | pseudo | similar to acidic ribosomal phosphoprotein P1 |
| RGD1560936 | pseudo | similar to 60S ribosomal protein L13 |
| RGD1561232 | pseudo | keratin 8-like |
| RGD1561381 | pseudo | similar to microsomal glutathione S-transferase 3 |
| RGD1561582 | pseudo | similar to Fus1 protein |
| RGD1561620 | pseudo | similar to isopentenyl diphosphate delta-isomerase type 2 |
| RGD1561627 | pseudo | similar to hypothetical protein 4930474N05 |
| RGD1561766 | pseudo | similar to basic transcription factor 3 |
| RGD1561843 | pseudo | ribosomal protein L23a pseudogene |
| RGD1561890 | pseudo | similar to craniofacial development protein 1 |
| RGD1562143 | pseudo | similar to Ctps protein |
| RGD1562146 | nc | RGD1562146 |
| RGD1562404 | pseudo | similar to ribosomal protein S18 |
| RGD1562542 | pseudo | similar to ribosomal protein S12 |
| RGD1562890 | nc | RGD1562890 |
| RGD1562937 | pseudo | similar to ribosomal protein S24 |
| RGD1563049 | nc | RGD1563049 |
| RGD1563100 | pseudo | similar to KIAA0089 |
| RGD1563375 | pseudo | similar to small nuclear ribonucleoparticle-associated protein |
| RGD1563725 | pseudo | similar to C1GALT1-specific chaperone 1 |
| RGD1564031 | pseudo | similar to transcription elongation factor B (SIII), polypeptide 2 |
| RGD1564167 | pseudo | similar to basic transcription factor 3 |
| RGD1564268 | pseudo | similar to ribosomal protein L36 |
| RGD1564386 | pseudo | similar to TDPOZ3 |
| RGD1564482 | nc | RGD1564482 |
| RGD1564534 | nc | similar to CHCHD4 protein |
| RGD1564613 | pseudo | similar to MGC40405 protein |
| RGD1564814 | pseudo | similar to CDNA sequence BC061212 |
| RGD1565054 | pseudo | similar to 60S acidic ribosomal protein P1 |
| RGD1565183 | pseudo | similar to ribosomal protein L28 |
| RGD1565495 | pseudo | similar to retinoblastoma binding protein 7 |
| RGD1565534 | pseudo | similar to RING finger protein 33 |
| RGD1565648 | pseudo | similar to Chain A, Solution Structure Of Rabbit Apo-S100a11 (19 Models) |
| RGD1565661 | pseudo | similar to RIKEN cDNA 3110001I22 |
| RGD1565689 | nc | RGD1565689 |
| RGD1565900 | pseudo | similar to ribosomal protein L27 |
| RGD1566033 | pseudo | similar to BC003940 protein |
| RGD1566136 | pseudo | similar to 40S ribosomal protein S9 |
| RGD1566197 | pseudo | similar to prohibitin |
| RGD1566247 | pseudo | similar to 40S ribosomal protein S2 |

Table S8 continued

| symbol | classif.¹ | GeneName |
|---------------|-----------------------------|---|
| RGD1566355 | pseudo | similar to cell division cycle 2-like 1 |
| Rhno1 | nc | similar to 5930416119Rik protein |
| Rpl27-ps1 | pseudo | ribosomal protein L27, pseudogene 1 |
| Rpl3111 | pseudo | similar to ribosomal protein L31 |
| Rpl34l1 | pseudo | ribosomal protein L34-like1 |
| Rpl5l1 | pseudo | ribosomal protein L5-like 1 |
| Rpph1 | nc | RNA component of mitochondrial RNA processing endoribonuclease |
| Rps15a1 | pseudo | ribosomal protein S15A-like 1 |
| Rps15-ps2 | pseudo | ribosomal protein S15, pseudogene 2 |
| Rps17l | pseudo | ribosomal protein S17-like |
| Rps27a-ps5 | pseudo | similar to putative protein kinase |
| Rps2-ps7 | pseudo | ribosomal protein S2, pseudogene 7 |
| Rrm1-ps1 | pseudo | ribonucleotide reductase M1, pseudogene 1 |
| Sdccag1-ps1 | pseudo | serologically defined colon cancer antigen 1 |
| Sec61gl | pseudo | SEC61 gamma subunit-like |
| Snrpgl2 | pseudo | small nuclear ribonucleoprotein polypeptide G-like 2 |
| Terc | nc | telomerase RNA component |
| Tnxa-ps1 | pseudo | tenascin XA, pseudogene 1 |
| Ubbp4 | pseudo | similar to ribosomal protein S27a |
| Vhll | pseudo | similar to von Hippel-Lindau syndrome protein homolog |
| Vof16 | nc | ischemia related factor vof-16 |
| Voom1r-ps20 | pseudo | similar to vomeronasal 1 receptor, f2 |
| Zbtb8os | os,coding | zinc finger and BTB domain containing 8 opposite strand, pseudogene 1 |
| Znrd1as | as,coding | hypothetical protein LOC685722 |

1 as: antisense, nc: noncoding, os: opposite strand, pseudo: pseudogene, red: coding

Table S9

Distinct recovery of noncoding RNA in endothelial cells, fibroblasts and AS-Tspan8-TEX

Table S9A

Distinct recovery of noncoding RNA in AS-Tspan8-TEX versus endothelial cells and fibroblasts

| symbol | classif. | EC | Fb | AS-Tspan8-TEX |
|---------------|-----------------|-----------|-----------|----------------------|
| Gas5 | nc | 37122 | 68794 | 21573 |
| RGD1564482 | nc | 1031 | 714 | 523 |
| Terc | nc | 158 | 190 | 714 |
| LOC689316 | nc | 70 | 62 | 570 |
| RGD1559859 | nc | 184 | 147 | 302 |
| Atp5h1 | pseudo | 28329 | 38699 | 48988 |
| Cfl1 | pseudo | 11037 | 9216 | 5596 |
| Cox6c-ps1 | pseudo | 2817 | 4240 | 4815 |
| Gapdh-ps1 | pseudo | 1585 | 1342 | 11323 |
| Hspd1-ps2 | pseudo | 7913 | 6339 | 16848 |
| Hspd1-ps3 | pseudo | 1428 | 1097 | 3074 |
| LOC100362689 | pseudo | 969 | 1783 | 367 |
| LOC102552129 | pseudo | 46021 | 42055 | 83265 |
| LOC102552394 | pseudo | 2272 | 1574 | 5149 |
| LOC102555366 | pseudo | 440 | 413 | 237 |
| LOC103690331 | pseudo | 260 | 294 | 136 |
| LOC103691563 | pseudo | 3769 | 4153 | 2498 |
| LOC103692072 | pseudo | 1046 | 2798 | 1333 |
| LOC103693457 | pseudo | 3902 | 4012 | 7049 |
| LOC361963 | pseudo | 12503 | 4012 | 14122 |
| LOC362473 | pseudo | 76332 | 70240 | 33927 |
| LOC365444 | pseudo | 553 | 501 | 880 |
| LOC366709 | pseudo | 4513 | 4451 | 11116 |
| LOC497952 | pseudo | 288 | 300 | 177 |
| LOC679583 | pseudo | 10735 | 15076 | 5773 |
| LOC680802 | pseudo | 304 | 93 | 982 |
| LOC687746 | pseudo | 639 | 600 | 1121 |
| LOC688539 | pseudo | 3397 | 2048 | 6302 |
| LOC689459 | pseudo | 355 | 251 | 2338 |
| LOC689961 | pseudo | 15500 | 15608 | 35372 |
| LOC690138 | pseudo | 5008 | 7033 | 3169 |
| Phb-ps1 | pseudo | 1859 | 1924 | 4199 |
| Prrc2c | pseudo | 843 | 1722 | 993 |
| RGD1559513 | pseudo | 719 | 776 | 2165 |
| RGD1559892 | pseudo | 4068 | 4012 | 2896 |
| RGD1560648 | pseudo | 5043 | 3984 | 8935 |
| RGD1561381 | pseudo | 1607 | 2062 | 212 |
| RGD1561843 | pseudo | 2876 | 2557 | 1403 |
| RGD1562143 | pseudo | 2034 | 1722 | 553 |
| RGD1562404 | pseudo | 215899 | 176585 | 19409 |
| RGD1562937 | pseudo | 23657 | 28329 | 14978 |
| RGD1564613 | pseudo | 1389 | 2006 | 946 |
| RGD1565183 | pseudo | 26249 | 27746 | 45864 |
| RGD1565495 | pseudo | 1992 | 1596 | 3214 |
| RGD1566033 | pseudo | 501 | 300 | 82 |
| RGD1566197 | pseudo | 1168 | 1075 | 293 |
| RGD1566355 | pseudo | 1499 | 1585 | 166 |
| Rps27a-ps5 | pseudo | 125 | 91 | 20976 |
| Rrm1-ps1 | pseudo | 1218 | 729 | 2006 |
| Sec61gl | pseudo | 22537 | 47315 | 24154 |
| Tnxa-ps1 | pseudo | 690 | 613 | 210 |
| Vhll | pseudo | 66 | 128 | 226 |

Table S9B

Distinct recovery of noncoding RNA in endothelial cells versus fibroblasts

| symbol | classif. | EC | Fb |
|--------------|----------|-------|-------|
| Gas5 | nc | 37122 | 68794 |
| LOC690120 | nc | 254 | 556 |
| Rpph1 | nc | 1243 | 2574 |
| Vof16 | nc | 190 | 744 |
| LOC100362689 | pseudo | 969 | 1783 |
| LOC103692072 | pseudo | 1046 | 2798 |
| LOC361963 | pseudo | 12503 | 4012 |
| LOC688539 | pseudo | 3397 | 2048 |
| Pcdhgb2 | pseudo | 452 | 146 |
| Prrc2c | pseudo | 843 | 1722 |
| Rrm1-ps1 | pseudo | 1218 | 729 |
| Sec61gl | pseudo | 22537 | 47315 |

Table S9C

Distinct recovery of noncoding RNA in AS-TEX treated endothelial cells or fibroblasts

| symbol | classif. | EC | EC+AS-TEX | Fb | Fb+AS-TEX |
|--------------|----------|------|-----------|------|-----------|
| RGD1562890 | nc | 180 | 215 | 380 | 174 |
| Vof16 | nc | 190 | 258 | 744 | 478 |
| LOC103692072 | pseudo | 1046 | 1448 | 2798 | 1859 |
| LOC303590 | pseudo | 488 | 209 | 174 | 228 |
| LOC680802 | pseudo | 304 | 101 | 93 | 97 |
| LOC688562 | pseudo | 3373 | 3984 | 4673 | 7033 |
| LOC689459 | pseudo | 355 | 292 | 251 | 383 |
| Prrc2c | pseudo | 843 | 1296 | 1722 | 2034 |
| Tnxa-ps1 | pseudo | 690 | 1361 | 613 | 468 |
| Vhl1 | pseudo | 66 | 68 | 128 | 77 |

Table S9D

Distinct recovery of noncoding RNA in AS-Tspan8-TEX treated endothelial cells or fibroblasts

| symbol | classif. | EC | EC+AS-Tspan8-TEX | Fb | Fb+AS-Tspan8-TEX |
|--------------|----------|-------|------------------|-------|------------------|
| Gas5 | nc | 37122 | 37516 | 68794 | 161369 |
| Hoxa11-as | nc | 545 | 1479 | 600 | 690 |
| RGD1564482 | nc | 1031 | 939 | 714 | 1499 |
| Rpph1 | nc | 1243 | 4405 | 2574 | 2876 |
| Terc | nc | 158 | 346 | 190 | 108 |
| Vof16 | nc | 190 | 285 | 744 | 338 |
| Cfl1 | pseudo | 11037 | 9316 | 9216 | 5833 |
| Cox6c-ps1 | pseudo | 2817 | 3170 | 4240 | 2288 |
| Hspd1-ps2 | pseudo | 7913 | 6608 | 6339 | 9878 |
| Hspd1-ps3 | pseudo | 1428 | 1091 | 1097 | 1734 |
| LOC100362689 | pseudo | 969 | 885 | 1783 | 3397 |
| LOC100363736 | pseudo | 30786 | 29559 | 34877 | 53232 |
| LOC102552129 | pseudo | 46021 | 51959 | 42055 | 25355 |
| LOC102552394 | pseudo | 2272 | 3019 | 1574 | 2740 |
| LOC102552870 | pseudo | 15076 | 9299 | 13401 | 26432 |
| LOC103690796 | pseudo | 6654 | 4755 | 4905 | 7697 |
| LOC103691563 | pseudo | 3769 | 3373 | 4153 | 8023 |
| LOC103693457 | pseudo | 3902 | 4406 | 4012 | 6841 |
| LOC301725 | pseudo | 6747 | 6252 | 7033 | 14766 |
| LOC365444 | pseudo | 553 | 365 | 501 | 855 |
| LOC366632 | pseudo | 5955 | 4330 | 5113 | 11113 |
| LOC366709 | pseudo | 4513 | 5918 | 4451 | 2684 |
| LOC367050 | pseudo | 3040 | 1710 | 3641 | 6562 |
| LOC680635 | pseudo | 3373 | 4168 | 2778 | 7332 |
| Pcdhgb2 | pseudo | 452 | 248 | 146 | 131 |
| Phb-ps1 | pseudo | 1859 | 2724 | 1924 | 1380 |
| RGD1559892 | pseudo | 4068 | 3566 | 4012 | 8023 |
| RGD1560208 | pseudo | 3517 | 3460 | 3169 | 1629 |
| RGD1561381 | pseudo | 1607 | 2445 | 2062 | 294 |
| RGD1561766 | pseudo | 2062 | 1400 | 1585 | 2091 |
| RGD1561843 | pseudo | 2876 | 2120 | 2557 | 4939 |
| RGD1562143 | pseudo | 2034 | 3248 | 1722 | 1003 |
| RGD1564268 | pseudo | 3214 | 3972 | 3444 | 6208 |
| RGD1564613 | pseudo | 1389 | 1747 | 2006 | 1314 |
| RGD1565183 | pseudo | 26249 | 24920 | 27746 | 42939 |
| RGD1566033 | pseudo | 501 | 497 | 300 | 750 |
| Rrm1-ps1 | pseudo | 1218 | 1112 | 729 | 362 |
| Sec61gl | pseudo | 22537 | 41136 | 47315 | 46988 |
| Tnxa-ps1 | pseudo | 690 | 1205 | 613 | 347 |
| Ubbp4 | pseudo | 25355 | 20383 | 24154 | 42055 |

Table S9E

Annotation of noncoding RNA with altered expression in TEX-treated endothelial cellsupregulated by AS-TEX

| | |
|---------------|---|
| Prrc2c (ps) | possibly engaged in histone gene regulation regulation of the oncogenic splice factor SRSF1 (serine/arginine-rich splicing factor 1) in lung cancer and ribonucleoprotein complex formation (1,2) |
| Tnxa-ps1 (nc) | possibly engaged in ischemic shock (glucose metabolism), might act as a competing endogenous RNA to affect dual specificity phosphatase 1 (Dusp1) expression, regulating Schwann cell migration (3,4) |

upregulated by AS-Tspan8-TEX

| | |
|---------------------------------------|---|
| Hoxa11-as (nc) | regulation of transcription by RNA polymerase II (5-22) |
| Phb-ps1 (ps) | upregulated in esophageal squamous cell carcinoma, forms RNA-RNA hybrids with PHB (prohibitin) increasing PHB expression at the mRNA and protein level with accelerated G1-G0 progression (23) |
| RGD1561381 (ps) | nuclear function in preconditioning neuroprotection in the neonate (24) |
| RGD1562143 (ps) | unknown |
| Rpph1 (nc) | aggravates hypoxia-induced tissue damage by targeting miR-206 and upregulation of ATG3 (autophagy related 3); downstream signaling may involve the PI3K/Akt/mTOR pathway. Overexpressed in early stage of Alzheimer, binds miR326-3p/miR-330-5p with release of Cdc42 (cell division cycle 42) and increased dendritic spine density. Targets miR-122 with release of ADAM10, PKM (pyruvate kinase M), NOD2 (nucleotide binding oligomerization domain containing 2) and IGF1R, promoting breast cancer progression (25-27) |
| Sec61gl (ps) | unknown |
| Terc (nc) | Terc regulates telomere length and is engaged in gene transcription; associated with progression of cervical intraepithelial to invasive cancer (28-32) |
| Vof16 (nc) | ischemia related factor, involved in attention deficit/hyperactivity symptoms (33) |
| <u>downregulated by AS-TEX</u> | |
| LOC303590 (ps) | unknown |
| <u>downregulated by AS-Tspan8-TEX</u> | |
| LOC102552870 (ps) | unknown |
| LOC365444 (ps) | similar to TRMT6 (tRNA methyltransferase 6), which accounts for N-methyladenosine epitranscriptomic regulation (34) |
| LOC367050 (ps) | unknown |
| Pcdhgb2 (ps) | unknown |
| RGD1561766 (ps) | similar to transcription factor 3 that activates transcription by binding regulatory E-box sequences (35) |

Table S9F

Annotation of noncoding RNA with altered expression in TEX-treated fibroblastsupregulated by AS-TEX

| | |
|-------------------------------------|---|
| LOC688562 (ps) | the U1 small nuclear RNA is one of the most abundant ncRNA, which is engaged in pre-messenger RNA splicing, it may contribute to gastric cancer progression via its downstream effector NGF (nerve growth factor) (36,37) |
| LOC689459 (ps) | unknown |
| <u>upregulated by AS-Tspan8-TEX</u> | |
| Gas5 (nc) | Gas5 is a tumor suppressor that mostly acts by miRNA sponging affecting multiple signaling pathways; it also is involved in innate immune cell regulation and angiogenesis (38-54) |
| Hspd1-ps2 (ps) | may be engaged in impaired stress response; connects several cellular networks including ribosome biogenesis (55) |
| Hspd1-ps3 (ps) | see ref. (55) |
| LOC100362689 (ps) | unknown |
| LOC100363736 (ps) | unknown |
| LOC102552394 (ps) | unknown |
| LOC102552870 (ps) | unknown |
| LOC103690796 (ps) | unknown |
| LOC103691563 (ps) | unknown |
| LOC103693457 (ps) | V-type proton ATPase subunit F pseudogene, may be engaged in protein export (56) |
| LOC301725 (ps) | unknown |
| LOC365444 (ps) | unknown |
| LOC366632 (ps) | unknown |
| LOC367050 (ps) | unknown |
| LOC680635 (ps) | unknown |
| RGD1559892 (ps) | unknown |
| RGD1561843 (ps) | unknown |
| RGD1564268 (ps) | may be engaged in a cell cycle regulatory network comprising nuclear lncRNAPLAC2/STAT1 binding to the RPL36 promoter; however cytosolic PLAC2 bound STAT1 becomes hampered in nuclear transfer (57) |

| | |
|--------------------------------------|---|
| RGD1564482 (nc) | unknown |
| RGD1565183 (ps) | similar to ribosomal protein L28 (cytosolic large ribosomal subunit) (58,59) |
| RGD1566033 (ps) | unknown |
| Ubbp4 (ps) | Belongs to the E3 ubiquitin ligase family, oncogenic, multiple activities, engaged in protein complex formation (60-62) |
| <u>downregulated by AS-TEX</u> | |
| LOC103692072 (ps) | unknown |
| RGD1562890 (nc) | unknown |
| Vhll (ps) | predisposes to develop tumors in specific organs, including the pancreas by triggering transformation, metabolism imbalance and ECM remodelling. May be engaged in pluripotency maintenance, associated with increased VEGF, PDGF β , TGF α , erythropoietin and glucose metabolism via increased HIF1 α expression and stabilization (63-66) |
| Vof16 (nc) | see ref. (33) |
| <u>downregulated by AS-Tspan-TEX</u> | |
| Cfl1 (LOC103694804) (ps) | Similar to cofilin 1. High cofilin 1 expression correlates with non-small cell lung cancer patients survival and low Twist1 expression; in triple negative breast cancer miR-200b-3p and miR-429-5p arrest the cell cycle by suppressing cyclin dependent kinases; in EC, it contributes to actin remodeling and migration upon VEGF stimulation and account for the actin cortex thickness and tension that inversely correlates with cell cycle progression; it also is involved in nuclear integrity, transcriptional regulation, apoptosis and lipid metabolism (67-72) |
| Cox6c-ps1 (ps) | unknown |
| LOC102552129 (ps) | unknown |
| LOC366709 (ps) | unknown |
| Phb-ps1 (ps) | see ref. (23) |
| RGD1560208 (ps) | unknown |
| RGD1561381 (ps) | similar to MGST3 (microsomal glutathione-S-transferase 3); engaged in oxidative stress protection; mutations might be associated with inflammation and risk of developing esophageal cancer (73,74) |
| RGD1562143 (ps) | unknown |
| RGD1564613 (ps) | unknown |
| Rrm1-ps1 (ps) | unknown |
| Terc (nc) | see ref. (28-32) |
| Tnxa-ps1 (ps) | see ref. (3,4) |

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Table S9G

Noncoding RNA in human PaCa A818.4 TEX versus A818.4 Tspan8kd cells

| Symbol | wt TEX | Tspan8kd cells | noncoding RNA | Gene name | reference |
|--------------|--------|----------------|---------------|---|-----------|
| ADIRF-AS1 | 330 | 940 | lnc | ADIRF antisense RNA 1 | |
| AFAP1-AS1 | 2892 | 3317 | lnc | AFAP1 antisense RNA 1 | 1-10 |
| AFG3L1P | 563 | 604 | pseudo | AFG3 like matrix AAA peptidase subunit 1, pseudogene | 11,12 |
| APCDD1L-AS1 | 688 | 11 | lnc | APCDD1L antisense RNA 1 (head to head) | 13 |
| ARRDC1-AS1 | 447 | 610 | lnc | ARRDC1 antisense RNA 1 | 14-16 |
| BAIAP2-AS1 | 1439 | 3212 | lnc | BAIAP2 antisense RNA 1 (head to head) | 17-20 |
| CD24P4 | 2391 | 2207 | pseudo | CD24 molecule pseudogene 4 | |
| CENPBD1P1 | 1616 | 1072 | pseudo | CENPB DNA-binding domains containing 1 pseudogene 1 | 21 |
| CLUHP3 | 203 | 465 | pseudo | clustered mitochondria homolog pseudogene 3 | |
| CROCCP2 | 249 | 173 | pseudo | ciliary rootlet coiled-coil, rootletin pseudogene 2 | |
| CRYBB2P1 | 1058 | 495 | pseudo | crystallin beta B2 pseudogene 1 | 22,23 |
| CTBP1-AS2 | 617 | 495 | lnc | CTBP1 antisense RNA 2 (head to head) | 24,25 |
| CUTALP | 725 | 1436 | lnc | PSMD5 antisense RNA 1 (head to head) | |
| Cytor | 780 | 365 | lnc | cytoskeleton regulator RNA | 26-32 |
| DBH-AS1 | 223 | 965 | lnc | DBH antisense RNA 1 | 33-35 |
| DHRS4-AS1 | 469 | 666 | lnc | DHRS4 antisense RNA 1 | 36-38 |
| DLGAP1-AS1 | 610 | 453 | lnc | DLGAP1 antisense RNA 1 | |
| DLGAP1-AS2 | 1326 | 982 | lnc | DLGAP1 antisense RNA 2 | |
| EEF1A1P1 | 584 | 239 | pseudo | eukaryotic translation elongation factor 1 alpha 1 pseudogene 1 | |
| EEF1A1P11 | 961 | 226 | pseudo | eukaryotic translation elongation factor 1 alpha 1 pseudogene 11 | |
| EEF1A1P13 | 572 | 252 | pseudo | eukaryotic translation elongation factor 1 alpha 1 pseudogene 13 | |
| EEF1A1P5 | 740 | 328 | pseudo | eukaryotic translation elongation factor 1 alpha 1 pseudogene 5 | 39 |
| EEF1GP1 | 575 | 182 | pseudo | eukaryotic translation elongation factor 1 gamma pseudogene 1 | |
| EIF3J-AS1 | 612 | 532 | lnc | EIF3J antisense RNA 1 (head to head) | |
| ELFN1-AS1 | 782 | 936 | lnc | ELFN1 antisense RNA 1 | 40 |
| EPB41L4A-AS1 | 4712 | 1156 | lnc | EPB41L4A antisense RNA 1 | 41 |
| FAM83H-AS1 | 1277 | 3745 | lnc | FAM83H antisense RNA 1 (head to head) | 42-45 |
| FBXL19-AS1 | 933 | 151 | lnc | FBXL19 antisense RNA 1 (head to head) | 46-51 |
| FER1L4 | 1319 | 5334 | lnc | fer-1 like family member 4, pseudogene | 52-56 |
| FGD5-AS1 | 2875 | 4288 | lnc | FGD5 antisense RNA 1 | 57,58 |
| FIRRE | 221 | 566 | lnc | firre intergenic repeating RNA element | 59-63 |
| FKBP9P1 | 120 | 204 | pseudo | FK506 binding protein 9 pseudogene 1 | |
| FOXD2-AS1 | 278 | 545 | lnc | FOXD2 antisense RNA 1 (head to head) | 64-74 |
| GATA2-AS1 | 214 | 1911 | lnc | GATA2 antisense RNA 1 | 75 |
| GOLGA2P5 | 250 | 1343 | lnc | golgin A2 pseudogene 5 | 76 |
| HAGLR | 2666 | 500 | lnc | HOXD antisense growth-associated long non-coding RNA | 77-83 |
| HLA-H | 278 | 803 | pseudo | major histocompatibility complex, class I, H (pseudogene) | 84 |
| HLA-L | 193 | 541 | pseudo | major histocompatibility complex, class I, L (pseudogene) | |
| HOTAIRM1 | 372 | 344 | lnc | HOXA transcript antisense RNA, myeloid-specific 1 | 85-88 |
| HOTTIP | 377 | 3111 | lnc | HOXA distal transcript antisense RNA | 89-92 |
| HOXA11-AS | 1689 | 1577 | lnc | HOXA11 antisense RNA | 93-96 |
| HOXA-AS2 | 382 | 608 | lnc | HOXA cluster antisense RNA 2 | 97-100 |
| HOXA-AS3 | 101 | 197 | lnc | HOXA cluster antisense RNA 3 | 101-104 |
| HOXB-AS3 | 1196 | 1361 | lnc | HOXB cluster antisense RNA 3 | 105,106 |
| HSPD1P1 | 448 | 362 | pseudo | heat shock protein family D (Hsp60) member 1 pseudogene 1 | 107 |
| ILF3-AS1 | 1065 | 510 | lnc | ILF3 antisense RNA 1 (head to head) | 108-110 |
| IPO5P1 | 452 | 1272 | pseudo | importin 5 pseudogene 1 | |
| JHDM1D-AS1 | 122 | 11 | lnc | JHDM1D antisense RNA 1 (head to head) | 111,112 |
| KCNQ1OT1 | 66 | 777 | lnc | KCNQ1 opposite strand/antisense transcript 1 (non-protein coding) | 113-119 |
| KRT8P12 | 507 | 391 | lnc | keratin 8 pseudogene 12 | 120 |
| LBX2-AS1 | 640 | 238 | lnc | LBX2 antisense RNA 1 | 121,122 |
| LDHAP7 | 381 | 410 | pseudo | lactate dehydrogenase A pseudogene 7 | |
| LHFPL3-AS2 | 542 | 174 | lnc | LHFPL3 antisense RNA 2 | |
| LINC00239 | 381 | 183 | lnc | long intergenic non-protein coding RNA 239 | 123 |
| LINC00261 | 2927 | 58 | lnc | long intergenic non-protein coding RNA 261 | 124-134 |
| LINC00467 | 728 | 497 | lnc | long intergenic non-protein coding RNA 467 | 135-138 |
| LINC00511 | 1105 | 1234 | lnc | long intergenic non-protein coding RNA 511 | 139-146 |
| LINC00649 | 170 | 138 | lnc | long intergenic non-protein coding RNA 649 | |
| LINC00659 | 1057 | 267 | lnc | long intergenic non-protein coding RNA 659 | 147 |
| LINC00662 | 1027 | 393 | lnc | long intergenic non-protein coding RNA 662 | 148-150 |

Table S9G continued

| Symbol | wt TEX | Tspan8kd cells | noncoding RNA | Gene name | reference |
|--------------|--------|-------------------|------------------|--|-------------|
| LINC00665 | 3624 | 2734 | lnc | long intergenic non-protein coding RNA 665 | 151-154 |
| LINC00667 | 914 | 1400 | lnc | long intergenic non-protein coding RNA 667 | 155-158 |
| LINC00847 | 673 | 540 | lnc | long intergenic non-protein coding RNA 847 | |
| LINC00868 | 120 | 91 | lnc | long intergenic non-protein coding RNA 868 | |
| LINC00896 | 123 | 575 | lnc | long intergenic non-protein coding RNA 896 | |
| LINC00920 | 1307 | 531 | lnc | long intergenic non-protein coding RNA 920 | 159 |
| LINC00941 | 2789 | 374 | lnc | long intergenic non-protein coding RNA 941 | 160-162 |
| LINC00963 | 2772 | 3788 | lnc | long intergenic non-protein coding RNA 963 | 163-167 |
| LINC01124 | 163 | 345 | lnc | long intergenic non-protein coding RNA 1124 | |
| LINC01137 | 527 | 274 | lnc | long intergenic non-protein coding RNA 1137 | 168 |
| LINC01184 | 1934 | 1518 | lnc | long intergenic non-protein coding RNA 1184 | 169 |
| LINC01278 | 1373 | 932 | lnc | long intergenic non-protein coding RNA 1278 | |
| LINC01578 | 3573 | 1100 | lnc | long intergenic non-protein coding RNA 1578 | |
| LNCAROD | 509 | 102 | lnc | lncRNA activating regulator of DKK1 | 170 |
| LINC-PINT | 120 | 105 | lnc | long intergenic non-protein coding RNA, p53 induced transcript | 171-178 |
| LOC100288175 | 141 | 113 | lnc | uncharacterized LOC100288175 | |
| LOC100506098 | 186 | 50 | lnc | uncharacterized LOC100506098 | |
| LOC100506688 | 140 | 193 | lnc | uncharacterized LOC100506688 | |
| LOC103344931 | 229 | 572 | lnc | uncharacterized LOC103344931 | |
| LOC150776 | 377 | 454 | pseudo | sphingomyelin phosphodiesterase 4, neutral membrane pseudogene | 179 |
| LOC220729 | 1531 | 1703 | pseudo | succinate dehydrogenase complex flavoprotein subunit A pseudogene | |
| LOC648987 | 554 | 295 | lnc | uncharacterized LOC648987 | |
| LOC728554 | 349 | 355 | lnc | THO complex 3 pseudogene | |
| LOC93622 | 1300 | 942 | pseudo | Morf4 family associated protein 1 like 1 pseudogene | 180 |
| LRRC37A16P | 2630 | 2680 | lnc | leucine rich repeat containing 37 member A16, pseudogene | 181 |
| LRRC75A-AS1 | 47550 | 14621 | lnc | LRRC75A antisense RNA 1 | 182,183 |
| LSP1P5 | 1191 | 331 | pseudo | lymphocyte-specific protein 1 pseudogene | 184 |
| MAP4K3-DT | 570 | 259 | lnc | MAP4K3-DT divergent transcript | 185 |
| MCM3AP-AS1 | 76 | 278 | lnc | MCM3AP antisense RNA 1 | 186-190 |
| MIR4435-2HG | 514 | 340 | lnc | MIR4435-2 host gene | 191-197 |
| MIR4458HG | 808 | 569 | lnc | MIR4458 host gene | 191-193 |
| MIR4712 | 322 | 402 | lnc | microRNA 4712 | 191-193 |
| MIR600HG | 122 | 786 | lnc | MIR600 host gene | 191-193,198 |
| MNX1-AS1 | 558 | 450 | lnc | MNX1 antisense RNA 1 (head to head) | 199-206 |
| MSL3P1 | 1449 | 1174 | pseudo | male-specific lethal 3 homolog (Drosophila) pseudogene 1 | 207,208 |
| MTATP6P1 | 401 | 13496 | pseudo | mitochondrially encoded ATP synthase 6 pseudogene 1 | |
| MTND2P28 | 167 | 4129 | pseudo | mitoch. encoded NADH:ubiqu. oxidoreduct. core sub.2 pseudogene 28 | |
| MTND4P12 | 323 | 16380 | pseudo | mitoch. encoded NADH:ubiqu. oxidoreduct. core sub.4 pseudogene 12 | |
| NACA3P | 1130 | 325 | pseudo | NACA family member 3 pseudogene | |
| NCBP2-AS2 | 2395 | 1017 | lnc | NCBP2 antisense RNA 2 (head to head) | 209-212 |
| NNT-AS1 | 395 | 916 | lnc | NNT antisense RNA 1 | 213-219 |
| NOP14-AS1 | 956 | 398 | lnc | NOP14 antisense RNA 1 | 220 |
| NORAD | 4399 | 13471 | lnc | non-coding RNA activated by DNA damage | 221-231 |
| NPM1P27 | 742 | 478 | pseudo | nucleophosmin 1 pseudogene 27 | |
| NUDT16P1 | 228 | 826 | pseudo | nudix hydrolase 16 pseudogene 1 | 232 |
| NUTM2A-AS1 | 622 | 385 | lnc | NUTM2A antisense RNA 1 | |
| OIP5-AS1 | 2951 | 5025 | lnc | OIP5 antisense RNA 1 | 233-240 |
| OLMALINC | 1966 | 1692 | lnc | oligodendrocyte maturation-associated long intergenic non-coding RNA | 241 |
| OTUD6B-AS1 | 1881 | 1068 | lnc | OTUD6B antisense RNA 1 (head to head) | 242,243 |
| PAX8-AS1 | 761 | 1584 | lnc | PAX8 antisense RNA 1 | 244-247 |
| PAXIP1-AS1 | 351 | 372 | lnc | PAXIP1 antisense RNA 1 (head to head) | |
| PCBP1-AS1 | 527 | 349 | lnc | PCBP1 antisense RNA 1 | 38,248 |
| PIK3CD-AS2 | 878 | 284 | lnc | PIK3CD antisense RNA 2 | |
| PLEKHM1P1 | 2247 | 2745 | pseudo | pleckstrin homology and RUN domain containing M1 pseudogene 1 | |
| PPP1R14BP3 | 593 | 137 | pseudo | protein phosphatase 1 regulatory inhibitor subunit 14B pseudogene 3 | 249 |
| PPP1R26-AS1 | 85 | 212 | lnc | PPP1R26 antisense RNA 1 | 250 |
| PROX1-AS1 | 179 | 71 | lnc | PROX1 antisense RNA 1 | 251,252 |
| PRR34-AS1 | 619 | 119 | lnc | PRR34 antisense RNA 1 | |
| PRSS3P1 | 3007 | 11 | lnc | protease, serine 3 pseudogene 1 | |
| PSMA3-AS1 | 695 | 1060 | lnc | PSMA3 antisense RNA 1 | 253 |
| PTOV1-AS1 | 454 | 545 | lnc | PTOV1 antisense RNA 1 | |

Table S9G continued

| Symbol | wt TEX | Tspan8kd cells | noncoding RNA | Gene name | reference |
|--------------|--------|-------------------|------------------|---|-----------|
| PVT1 | 1879 | 1361 | lnc | Pvt1 oncogene (non-protein coding) | 254-266 |
| RNASEH1-AS1 | 905 | 379 | lnc | RNASEH1 antisense RNA 1 | 199 |
| RNF157-AS1 | 308 | 650 | lnc | RNF157 antisense RNA 1 | |
| RNF216P1 | 358 | 304 | pseudo | ring finger protein 216 pseudogene 1 | 267,268 |
| RP9P | 289 | 160 | lnc | retinitis pigmentosa 9 pseudogene | |
| RPARP-AS1 | 770 | 495 | lnc | RPARP antisense RNA 1 | 269 |
| RPL10P3 | 15300 | 2971 | lnc | ribosomal protein L10 pseudogene 3 | |
| RPL13AP5 | 1345 | 581 | lnc | ribosomal protein L13a pseudogene 5 | |
| RPL13P12 | 29649 | 7251 | lnc | ribosomal protein L13 pseudogene 12 | 270,271 |
| RPL14P1 | 725 | 266 | lnc | ribosomal protein L14 pseudogene 1 | 272 |
| RPL18AP3 | 2941 | 686 | lnc | ribosomal protein L18a pseudogene 3 | 249 |
| RPL32P3 | 191 | 706 | lnc | ribosomal protein L32 pseudogene 3 | 273 |
| RPL3P4 | 539 | 128 | lnc | ribosomal protein L3 pseudogene 4 | 272 |
| RPL4P4 | 502 | 172 | lnc | ribosomal protein L4 pseudogene 4 | 272 |
| RPLP0P6 | 1818 | 447 | pseudo | ribosomal protein lateral stalk subunit P0 pseudogene 6 | 272,274 |
| RPS13P2 | 791 | 404 | lnc | ribosomal protein S13 pseudogene 2 | 272 |
| RPS23P8 | 860 | 775 | lnc | ribosomal protein S23 pseudogene 8 | 272 |
| RPS28P7 | 5522 | 1603 | lnc | ribosomal protein S28 pseudogene 7 | 272 |
| RPS4XP22 | 3723 | 1275 | lnc | ribosomal protein S4X pseudogene 22 | 272 |
| SBDSP1 | 2086 | 627 | pseudo | Shwachman-Bodian-Diamond syndrome pseudogene 1 | 275-280 |
| SCAND2P | 504 | 553 | pseudo | SCAN domain containing 2 pseudogene | 281 |
| SDHAP2 | 160 | 319 | pseudo | succinate dehydrog. complex flavoprotein subunit A pseudogene 2 | |
| SLC25A25-AS1 | 205 | 876 | lnc | SLC25A25 antisense RNA 1 | 282 |
| SLC2A1-AS1 | 268 | 219 | lnc | SLC2A1 antisense RNA 1 | |
| SNHG1 | 11994 | 4144 | lnc | small nucleolar RNA host gene 1 | 283-293 |
| SNHG10 | 136 | 207 | lnc | small nucleolar RNA host gene 10 | 294,295 |
| SNHG12 | 1194 | 493 | lnc | small nucleolar RNA host gene 12 | 296-303 |
| SNHG15 | 2656 | 2150 | lnc | small nucleolar RNA host gene 15 | 304-313 |
| SNHG16 | 2079 | 1083 | lnc | small nucleolar RNA host gene 16 | 314-321 |
| SNHG17 | 1755 | 637 | lnc | small nucleolar RNA host gene 17 | 322-324 |
| SNHG19 | 2211 | 617 | lnc | small nucleolar RNA host gene 19 | 325 |
| SNHG3 | 2044 | 2281 | lnc | small nucleolar RNA host gene 3 | 326-331 |
| SNHG5 | 4461 | 634 | lnc | small nucleolar RNA host gene 5 | 331-339 |
| SNHG6 | 5536 | 2650 | lnc | small nucleolar RNA host gene 6 | 340-348 |
| SNHG7 | 5245 | 2054 | lnc | small nucleolar RNA host gene 7 | 349-353 |
| SNHG8 | 19650 | 2674 | lnc | small nucleolar RNA host gene 8 | 354-357 |
| SNHG9 | 525 | 160 | lnc | small nucleolar RNA host gene 9 | 358,359 |
| STAG3L4 | 584 | 309 | pseudo | stromal antigen 3-like 4 (pseudogene) | |
| SVIL-AS1 | 556 | 288 | lnc | SVIL antisense RNA 1 | 360 |
| THAP9-AS1 | 2607 | 2016 | lnc | THAP9 antisense RNA 1 | |
| THUMP3-AS1 | 488 | 624 | lnc | THUMP3 antisense RNA 1 | 361 |
| TMEM147-AS1 | 174 | 671 | lnc | TMEM147 antisense RNA 1 | |
| TMSB10P1 | 1613 | 247 | pseudo | thymosin beta 10 pseudogene 1 | |
| TNRC6C-AS1 | 214 | 703 | lnc | TNRC6C antisense RNA 1 | 362,362 |
| TPT1P9 | 1258 | 513 | pseudo | tumor protein, translationally-controlled 1 pseudogene 9 | |
| TRIM52-AS1 | 396 | 193 | lnc | TRIM52 antisense RNA 1 (head to head) | 364 |
| TRPM2-AS | 105 | 90 | | TRPM2 antisense RNA | 365-370 |
| TUBBP6 | 9 | 2 | pseudo | tubulin beta class I pseudogene 6 | |
| UBA6-AS1 | 511 | 247 | lnc | UBA6 antisense RNA 1 (head to head) | |
| VPS9D1-AS1 | 594 | 446 | lnc | VPS9D1 antisense RNA 1 | 371 |
| WAC-AS1 | 487 | 583 | lnc | WAC antisense RNA 1 (head to head) | 372,373 |
| WASH3P | 596 | 317 | pseudo | WAS protein family homolog 3 pseudogene | 374-377 |
| WASH8P | 570 | 325 | pseudo | WAS protein family homolog 1 pseudogene | |
| ZBED5-AS1 | 485 | 826 | lnc | ZBED5 antisense RNA 1 | |
| ZDHHC8P1 | 634 | 549 | pseudo | zinc finger DHHC-type containing 8 pseudogene 1 | |
| ZEB1-AS1 | 184 | 284 | lnc | ZEB1 antisense RNA 1 | 378-384 |
| ZFAS1 | 29226 | 5139 | lnc | ZNF1 antisense RNA 1 | 385-401 |
| ZNF204P | 469 | 639 | pseudo | zinc finger protein 204, pseudogene | |
| ZNF252P | 1469 | 2058 | pseudo | zinc finger protein 252, pseudogene | |
| ZNF271P | 1309 | 1280 | pseudo | zinc finger protein 271, pseudogene | |
| ZNF37BP | 447 | 1244 | pseudo | zinc finger protein 37B, pseudogene | |

Table S9G continued

| Symbol | wt TEX | Tspan8kd cells | noncoding RNA | Gene name | reference |
|---------------|--------|-------------------|------------------|---|-----------|
| ZNF670-ZNF695 | 169 | 397 | lnc | ZNF670-ZNF695 readthrough (NMD candidate) | 402,403 |
| ZNF702P | 436 | 812 | lnc | zinc finger protein 702, pseudogene | 281 |
| ZNF767P | 193 | 493 | pseudo | zinc finger family member 767, pseudogene | 273 |

Table S9H

Impact of human PaCa-TEX on human Tspan8kd PaCa cell lncRNA / nc pseudogenes

| Symbol | Tspan8kd cells | Tspan8kd cells+wt-TEX | Tspan8kd cells+ wt TEX: Tspan8kd cells | reference ^a |
|--------------------|-------------------|--------------------------|--|------------------------|
| upregulated | | | | |
| ADIRF-AS1 | 940 | 1495 | 1.59 | |
| AFG3L1P | 604 | 1125 | 1.86 | 11,12 |
| APCDD1L-AS1 | 108 | 13037 | 120.72 | 13 |
| ARRDC1-AS1 | 610 | 4427 | 7.26 | 14-16 |
| BAIAP2-AS1 | 3212 | 5547 | 1.73 | 17-20 |
| CD24P4 | 2207 | 16742 | 7.58 | |
| CYTOR | 365 | 1135 | 3.11 | 26-32 |
| DBH-AS1 | 965 | 2711 | 2.81 | 33-35 |
| DLGAP1-AS1 | 453 | 1599 | 3.53 | |
| DLGAP1-AS2 | 982 | 10433 | 10.62 | |
| EPB41L4A-AS1 | 1156 | 2066 | 1.79 | 41 |
| FGD5-AS1 | 4288 | 8376 | 1.95 | 57,58 |
| FKBP9P1 | 204 | 1262 | 6.19 | |
| GOLGA2P5 | 1343 | 2939 | 2.19 | 76 |
| HOXA11-AS | 1577 | 4887 | 3.10 | 93-96 |
| HOXB-AS3 | 1361 | 3610 | 2.65 | 105,106 |
| ILF3-AS1 | 510 | 1190 | 2.33 | 108-110 |
| IPO5P1 | 1272 | 4387 | 3.45 | |
| JHDM1D-AS1 | 110 | 2095 | 19.04 | 111,112 |
| KCNQ1OT1 | 777 | 1420 | 1.83 | 113-119 |
| LDHAP7 | 410 | 827 | 2.02 | |
| LINC00649 | 138 | 3021 | 21.89 | |
| LINC00662 | 393 | 613 | 1.56 | 148-150 |
| LINC00667 | 1400 | 43851 | 31.32 | 157,158 |
| LINC00847 | 540 | 863 | 1.60 | |
| LINC00868 | 91 | 423 | 4.65 | |
| LINC00941 | 374 | 1881 | 5.02 | 160-162 |
| LINC00963 | 3788 | 11066 | 2.92 | 163-167 |
| LINC01184 | 1518 | 19319 | 12.73 | 169 |
| LINC01578 | 1100 | 4844 | 4.40 | |
| LNCAROD | 102 | 447 | 4.38 | 170 |
| LOC100506688 | 193 | 1282 | 6.64 | |
| MIR4435-2HG | 340 | 2322 | 6.84 | 191-197 |
| NCBP2-AS2 | 1017 | 1683 | 1.66 | 209-212 |
| OTUD6B-AS1 | 1068 | 3801 | 3.56 | 242,243 |
| PAX8-AS1 | 1584 | 2511 | 1.59 | 244-247 |
| PPP1R14BP3 | 137 | 261 | 1.91 | 249 |
| PROX1-AS1 | 71 | 1218 | 17.24 | 251,252 |
| PSMA3-AS1 | 1060 | 21329 | 20.11 | 253 |
| PSMD5-AS1 | 1436 | 3494 | 2.43 | |
| PVT1 | 1361 | 7057 | 5.19 | 254-266 |
| RPL10P3 | 2971 | 36460 | 12.27 | |
| RPL32P3 | 706 | 1057 | 1.50 | 273 |
| RPS28P7 | 1603 | 11522 | 7.19 | 272 |
| RPS4XP22 | 1275 | 9244 | 7.25 | 272 |
| SLC25A25-AS1 | 876 | 1859 | 2.12 | 282 |
| SNHG1 | 4144 | 6966 | 1.68 | 283-293 |
| SNHG12 | 493 | 749 | 1.52 | 296-303 |
| SNHG16 | 1083 | 5107 | 4.72 | 314-321 |
| SNHG17 | 637 | 1826 | 2.87 | 322-324 |

| | | | | |
|----------------------|-------|------|-------|---------|
| SNHG3 | 2281 | 3910 | 1.71 | 326-331 |
| SNHG5 | 634 | 6140 | 9.68 | 331-339 |
| TUBBP6 | 141 | 1418 | 10.06 | |
| ZNF670-ZNF695 | 397 | 1926 | 4.85 | 402,403 |
| downregulated | | | | |
| ELFN1-AS1 | 936 | 615 | 0.66 | 40 |
| GATA2-AS1 | 1911 | 1127 | 0.59 | 75 |
| LINC00239 | 183 | 110 | 0.60 | 123 |
| LINC00665 | 2734 | 1761 | 0.64 | 151-154 |
| LINC01124 | 345 | 106 | 0.31 | |
| LOC220729 | 1703 | 1125 | 0.66 | |
| LRRC75A-AS1 | 14621 | 3298 | 0.23 | 182,183 |
| MTATP6P1 | 13496 | 4151 | 0.31 | |
| MTND2P28 | 4129 | 2619 | 0.63 | |
| MTND4P12 | 16380 | 3701 | 0.23 | |
| NORAD | 13471 | 2558 | 0.19 | 221-231 |
| OIP5-AS1 | 5025 | 1948 | 0.39 | 233-240 |
| OLMALINC | 1692 | 731 | 0.43 | 241 |
| PIK3CD-AS2 | 284 | 138 | 0.49 | |
| PLEKHM1P1 | 2745 | 1172 | 0.43 | |
| RPL13AP5 | 581 | 353 | 0.61 | |
| RPL13P12 | 7251 | 3389 | 0.47 | 270,271 |
| RPS13P2 | 404 | 175 | 0.43 | 272 |
| SNHG15 | 2150 | 1026 | 0.48 | 304-313 |
| SNHG8 | 2674 | 1567 | 0.59 | 354-357 |
| TNRC6C-AS1 | 703 | 395 | 0.56 | 362,363 |
| ZBED5-AS1 | 826 | 396 | 0.48 | |

Table S9I

Confirmed and predicted functional annotations

| Symbol*,* | Functional annotation |
|-------------|--|
| AFAP1-AS1 | expression is tightly regulated by DNA methylation; GAS8-AS may downregulate AFAP1-AS1; represses HMG box-containing protein 1 (HBP1) expression by recruiting LSD1 to the HBP1 promoter; promotes malignant phenotype through binding with lysine-specific demethylase 1, represses miR-4695-5p with release of TCF4 and downstream β -catenin activation, competes with miR-384 releasing activin receptor A type I (ACVR1); binds RAP1B repressing miR-181a, activates interferon regulatory factor (IRF)7, the retinoid-inducible protein (RIG)-I-like receptor signaling pathway and Bcl-2; recruits EZH2 to the p21 promoter with epigenetic repression; sequesters miR-181a with upregulation of RAP1B; also affects the actin cytokeleton signaling pathway (1-10) |
| AFG3L1P | belongs to ATP-dependent proteolytic machines in the inner membrane of mitochondria, crucial for the maintenance of mitochondrial activities. They act as processing enzymes in vivo and might be of relevance for the pathogenesis of neurodegenerative disorders like spastic paraplegia (11,12) |
| APCDD1L-AS1 | associated with poor prognosis in lung, its association with semaphorin5A, 6D, ADAMTS like1, slit guidance ligand3 and tenascinC may provide hints towards the underlying mechanism; also linked to a set of essential spliceosome and RNA binding protein (RBP) genes, including heterogeneous nuclear ribonucleoprotein L (HNRNPL), these RBP-RNA interactions regulate alternative splicing including ncRNA (13) |
| ARRDC1-AS1 | binds phosphatidylserine and phosphoinositol and is engaged in pyroptosis, in breast cancer this arrestin domain containing protein is associated with recurrence (14-16) |
| BAIAP2-AS1 | coexpressed with <i>IL1</i> and <i>IL18</i> families might function in the clearance process after RSV infection via cytokine-cytokine receptor interaction and TLR signaling; upregulated in hepatitis B virus-related HCC and of prognostic value in cervical squamous cell carcinoma (17-20) |
| CENPBD1P1 | this palmitoyl acyltransferase shares interactors with huntingtin and might play a role in the pathogenesis of Huntington's disease (21) |
| CRYBB2P1 | crystallins are heterogeneous proteins sharing significant homology with small heat shock proteins and having chaperone-like properties, which protect retinal ganglion cells, mutations being linked to cataract. , including the ability to bind and prevent the precipitation of denatured proteins and to increase cellular resistance to stress-induced apoptosis; ncRNA linked to cataract (22,23) |
| CTBP1-AS2 | Sp1-induced lncRNA, stabilizes TLR4 mRNA by recruiting FUS linked to cardiomyocyte hypertrophy; also upregulated in papillary thyroid cancer (24,25) |
| CYTOR | binds enhancer of zeste homolog 2, silencing of tumor suppressor genes, also binds NCL and Sam68, the heterotrimeric complex activation the NF κ B pathway; binding to cytoplasmic β -catenin impeded casein kinase 1 (CK1)-induced β -catenin phosphorylation that enabled it to accumulate and translocate to the nucleus; reciprocally, the β -catenin/TCF complex enhances the transcription activity of CYTOR in the nucleus, thus forming a positive feed-forward circuit, it sponges miR-16, -103a, -199-5p, -138 (26-32) |
| DBH-AS1 | by targeting miR-138 the FAK/Src/ERK pathway becomes activated, also linked to PI3K/Akt pathway activation, involved in HCC and osteosarcoma promotes activation of the PI3K/Akt pathway; competes with miR-138 promoting FAK/Src/ERK pathway activation; induced by hepatitis B virus x protein (HBx), promotes CDK6, CCND1, CCNE1 upregulation and p16, p21 and p27 downregulation (33-35) |

| | |
|-----------------------|--|
| DHRS4-AS1 | controls 3 DHRS4 genes; where DNA looping and H3 modifications promote DHRS4-A1 expression, it is related to autophagy, downregulation may promote enhancer physically interacts with promoter glioma and RCC progression (36-38) |
| EEF1A1P5 ELFN1-AS1 | interferes with translation / translation elongation (39) Myclo-2, myc-regulated lncRNA, regulates myc target genes (CDKN1A, CDKN2B), RNA binding proteins HuR and hbrNPK interact with MYclo; CoCa, PC, transformation and tumorigenesis (40) |
| EPB41L4A-AS1 | colocalizes with HDAC2 and NPMMI in the nucleolus, upon low EPB41L4A-AS1 released HDAC2 plays a major role in metabolic reprogramming, important in glycolysis and glutaminolysis, frequently downregulated in cancer (41) |
| FAM83H-AS1 | regulates proliferation and invasion through NOTCH, MET/EGFR signaling in CoCa, LungCa, Breast-Ca; (42-45) |
| FBXL19-AS1 | possibly binding miR-203; targets miR-431-5p promoting release of the RAF axis; also sponges miR-718, and miR-346, and promotes WD repeat domain 66 (WDR66) expression, high expression in several cancer, (46-51) |
| FER1L4 | acts as tumor suppressor in several cancer, competes with miR106-5p, interacts with miR-18a-5p that affects Pten expression (52-56) |
| FGD5-AS1 | promotes CoCa through CDCA7 upregulation by sponging miR-302e, regulates miR-142-3p/SOCS6/NFkb pathway (periodontitis) (57,58) |
| FIRRE | regulates inflammatory genes in macrophages and intestinal epithelial cells by interacting with hnrU, which stabilizes mRNA of selected inflammatory genes; it also functions as a ribonucleic nuclear retention signal that retains otherwise cytoplasmic mRNA in the nucleus, whereas intronic sequences can function as a DNA enhancer element; it becomes activated via Myc and is engaged in Wnt/ β -catenin signaling promoting β -catenin nuclear translocation (59-63) |
| FOXD2-AS1 | upregulated in several cancer; binds the enhancer of zeste homolog 2 (EZH2) and lysine (K)-specific demethylase 1A (LSD1) proteins, which mediate EphB3 downregulation; it also negatively regulates the expression of Tribbles pseudokinase 3 (TRIB3), a negative regulator of Akt forming an RNA-DNA complex with the promoter of TRIB3, which leads to Akt activation increasing the expression of the transcription factor E2F1, E2F1 also binds to the FOXD2-AS1 promoter region creating a FOXD2-AS1/Akt/E2F1 feedback loop; CREB1 also induces FOXD2-AS1 transcription, which via competing with miR-185 promotes Akt upregulation; by competing with miR-363-5p, the S100A1 pathway becomes activated (64-74) |
| GATA2-AS1 | frequent altered in GaCa (75) |
| GOLGA2P5 | may be important for TERT regulation in p53-deficient cancer (76) |
| HAGLR / HOXD-AS1 | transcription is promoted by STAT3, it is engaged in many cancer progression, mostly via capturing miRNA, it competes with miR-130a-3p with liberation of SOX4 supporting EZH2 and MMP2 expression; HOXD-AS1 recruited WDR5 to directly regulate the expression of target genes by mediating histone H3 lysine 4 tri-methylation (H3K4me3), targeting miR-130a-3p also releases zinc finger E-box homeobox 1 (ZEB1) from repression as well as E2F8; by targeting miR-133a-3p it may contribute to activation of Wnt/ β -catenin signaling, by competing with miR-608 it contributes to frizzled receptor 4 (FZD4) activation; upregulation of Rho GTPase activating protein 11A (ARHGAP11A) may be due to competitively binding to miR-19a; it also targets miR-147a and others (77-83) |
| HLA-H | impact on HLA response (84) |
| HOTAIRM1 | PU.1 may activate HOTAIRM1 expression through binding to its regulatory region; HOTAIRM1 mediated demethylation of histone H3K9 and H3K27 and reduced DNA methylation levels by sequester epigenetic modifiers G9a and EZH2, which are H3K9me and H3K27me specific histone methyltransferases, and DNA methyltransferases (DnmTs) away from the transcription start site of HOXA1 gene (example of transcriptional control over the chromatin state of gene by contributing to physical dissociation of chromatin loops at the cluster proximal end) (85-88) |
| HOTTIP | sponges miR-4301, TGFBR1 and -2 become upregulated by sponging miR-148a, regulates insulin-like growth factor2 (IGF2) via miR-615, HOTTIP could bind to enhancer of zeste homolog 2 (EZH2) and lysine specific demethylase 1 (LSD1), thereby repressing LATS2 expression, also sponges miR-216a-5p at 3'-UTR, miR-637 and miR-216a and is engaged in autophagy via the PI3K/Akt/Atg13 pathway, it mediates chromatin organization by associating with the CCCTC-binding factor (CTCF) that serves as an insulator by organizing HOXA cluster (89-92) |
| HOXA11-AS | recruits EZH2 along with the histone demethylase LSD1 or DNMT1, which function as a scaffold, HOXA11-AS also functions as a sponge for miR-1297, antagonizing its ability to repress EZH2 protein translation, functions as ceRNA for miR-214-3p, which in turn positively regulates EZH2 expression, interacts with WDR5 and promotes β -catenin transcription, represses P21 transcription, and induce KLF2 mRNA degradation via interacting with STAU1, via sponging miR-200b several EMT genes become upregulated; also targets miR-124-3p and miR-506-3p that regulates NIMA-related kinase 6 (NEK6), sponges let-7i, which represses ABCC10 (93-96) |
| HOXA-AS2 | could interact with EZH2 (enhancer of zeste homolog 2), LSD1 (lysine specific demethylase 1) and recruit them to p21 (CDKN1A), KLF2 promoter regions to repress their transcription, sponges miR-520-3c, regulating TGFBR2 and RELA, and miR-223-3p repressing glypican 3 (GPC3), binds miR-373 promoting epidermal growth factor receptor (EGFR) expression with increased expression levels of VE-cadherin, MMP-2 and MMP-9 via activating the PI3K/Akt pathway interact with enhancer of zeste homolog 2 Polycomb repressive complex (97-100) |
| HOXA-AS3 | colocalizes with NFkB gene promoters positively regulating activity through control of the expression of the NFkB inhibitor protein Ikb α and the acetylation status at the K310 site of p65, interacts with Enhancer Of Zeste 2 (EZH2) required for H3 lysine-27 trimethylation (H3K27me3) of key osteogenic transcription factor Runx2 during MSC differentiation, sponges miR-29c promoting MEK/ERK pathway activation, poor prognosis glioma, MSC commitment, EC activation (101-104) |
| HOXB-AS3 | regulates p53 expression by binding to DNMT1, upregulated in several cancer and leukemia (105,106) |
| HSPD1P1 | possibly engaged in microtubule elongation (107) |
| ILF3-AS1 | induced by nuclear transcription factor SP1, sponges miR-212 promoting SOX5 release from repression, interacts with EZH2, promoting EZH2 binding to the miR-200b/a/429 promoter and repressing miR- |

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| | 200b/a/429, represses the binding of EZH2 to the ILF3 promoter inducing euchromatin formation and ILF3 transcription activation creating an ILF3 - ILF3-AS1 positive feedback loop, sponges miR-200b/a, -429 (108-110) |
| JHDM1D-AS1 | protects from apoptosis via inhibiting DNAJC10 that affects Bcl-2 and eIF2 α phosphorylation, may be engaged in HGF and FGF1 upregulation (111,112) |
| KCNQ1OT1 | interacts with chromatin and regulates transcription of many genes, sponges miR-140-5p releasing SOX4 from repression, and miR-217 releasing ZEB1 that in a feedback loop enhances KCNQ1OT1 transcription; targeting miR-214 promotes caspase-1 release from repression (113-119) |
| KRT8P12 | may be linked to Huntington (120) |
| LBX2-AS1 | may promote activation of the NOTCH pathway, frequent in RCC, angiogenesis-related (121,122) |
| LINC00239 | promotes chemoresistance via PI3K/Akt/mTOR in AML (123) |
| LINC00261 | a tumor suppressive ncRNA, epigenetically regulated by hypermethylation of the DNA damage response region, it downregulates Snail; targets miR-558 releasing TIMP4 from repression, suppressive via targeting miR-324-3p and Wnt signaling, also targets miR-182, miR-183, miR-153, miR-27a, and miR-96 promoting FOXO1 release, sponging miR-522-3p inhibits Wnt signaling; by miR-132-3p binding it regulates BCL2L11; it increases the methylation of the dihydropyrimidine dehydrogenase (DPYD) promoter through the recruitment of DNA methyltransferase (DNMT), which, in turn, decreases DPYD activity (124-134) |
| LINC00467 | upregulation by STAT1, downregulated by N-Myc; epigenetically silences DKK1 by recruiting enhancer of zeste 2 polycomb repressive complex 2 subunit (EZH2) to DKK1 promoter, which allows for Wnt/ β -catenin pathway activation; also recruits EZH2 to the HtrA serine peptidase 3 (HTRA3) promoter to inhibit its expression; sponges miR-9-5p promoting peroxisome proliferator-activated receptor alpha (PPARA) release (135-138) |
| LINC00511 | AP2 γ binds to the promoter region activating transcription; acts as a modular scaffold of EZH2/PRC2 complexes, coordinated their localization, and specified the histone modification pattern on the target genes, including p57 and p21; competes with miR-29b-3p releasing VEGFA and Cyr61; competing with miR-765 releases laminin subunit gamma 2 (LAMC2); competing with miR-185-3p releases E2F1 protein that promotes Nanog transcription; competing with miR-15a-3p allows for Wnt/ β -catenin signaling activation; competes with miR-29c releases cyclin dependent kinase 6 (CDK6) from repression; (139-146) |
| LINC00659 | oncogenic in CoCa, growth inhibition and apoptosis, possibly via suppressing PI3K/Akt signaling (147) |
| LINC00662 | suppresses the HIPPO-YAP1 pathway by sponging miR-497-5p; promotes stemness by interacting with Lin28; upregulates ROCK1 via sponging miR-340-5p (148-150) |
| LINC00665 | interacts with EZH2 and regulate the phosphatidylinositol 3-kinase (PI3K)/AKT pathway; targets miR-186-5p leading to MAP4K3 activation; targets miR-98 activating the downstream AKR1B10-ERK signaling pathway (151-154) |
| LINC00667 | associated with NSCLC progression and OvCa recurrence. Regulates vasculogenesis through miR-429 that represses ALDH1A1, associates with miR-19b-3p regulating connective tissue growth factor (CTGF) expression (155-158) |
| LINC00920,CALIC | associates with hnRNP-L promoting RTK AXL upregulation (CoCa metastasis) (159) |
| LINC00941 | correlated with increased expression of TDRKH-AS1, which regulates telomere organization and EZH2-mediated epigenetic silencing of CDKN1A, CDKN1B and IL24 ; competes with miR-34a accompanied by Snail upregulation and EMT, represses SPRR5, essential in keratinocyte differentiation (160-162) |
| LINC00963 | prevents glycolytic kinase PGK1 ubiquitination leading to AKT/mTOR signaling pathway activation; targets miR-608 which releases NACC1; binds miR-204-3p releasing fibronectin-1 (FN1) from repression; sponges miR-1193, releasing SOX4 from repression miR-608/NACC1 in melanoma, fibrosis (kidney), LuCa metastasis via PGK1-Akt/mTOR (163-167) |
| LINC01137 | suppressive in several cancer, located in a suppressive lncRNA nexus (168) |
| LINC01184 | engaged in stress response in induced pluripotent stem cells (169) |
| LNCAROD | enhances DKK1 transcription via the released form with evidence that the regulatory interaction requires dissociation (170) |
| LINC-PINT | tumor suppressor, interacts with PRC2, regulating EGR1 transcription, proximity of co-regulated genomic loci essential; the circular form of the LINC-PINT interacts with polymerase associated factor complex (PAF1c) and inhibits the transcriptional elongation of multiple oncogenes; binds miR-208a-3p with release of JUN and MAPK pathway activation and release of programmed cell death 4 (PDCD4); targets miR-425-5p that via PTCH1 is engaged in the HH pathway; sponges miR-543 and miR-576-5p; may also downregulate lncRNA BANCR (171-178) |
| LOC150776 | possibly engaged in ES growth and differentiation (179) |
| LOC93622 | interacts with p12CDK2AP1, inhibits cell cycle progression (180) |
| LRRC37A16P | may be engaged in filipodia formation (181) |
| LRRC75A-AS1 | highly associated with the target genes of transcription factors TP53 and ETS variant 6, may also act as a negative regulator of vascular calcification (182,183) |
| LSP1P5 | frequently associated with chromosomal translocation in CLL (184) |
| MAP4K3-DT | together with other loci engaged in childhood obesity (185) |
| MCM3AP-AS1 | targets miR-211 with KLF5 release from repression associated with AGGF1 promoter, also affects the PI3K/Akt and ERK1/2 signaling pathway, important in angiogenesis; sponges miR-211-5p that affects secreted protein acidic and cysteine rich (SPARC) expression; targets miR-194-5p promoting FOXA1 expression; also targets miR-455 (186-190) |
| MIR4435-2HG | host gene, interacts with β -catenin preventing its degradation by the proteasome that forces EMT; is associated with differential P38/MAPK, VEGF, cell adhesion molecules and NOD-like receptor signaling pathway activation; binds to and inhibits desmoplakin (DSP) promoting WNT/ β -catenin signaling and EMT; functions as a miRNA sponge of miR-125a-5p and miR-125b-5p increasing CD44 expression (191-197) |
| MIR4458HG | host gene (191-193) |

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| MIR4712 | host gene (191-193) |
| MIR600HG | host gene ; 193 one of five lncRNA predictive for PaCa progression (191-193,198) |
| MNX1-AS1 | upregulated in many cancer; affects CDK4, cyclin D, Bax, and Bcl-2 expression; strengthens pERK1/ and pJNK expression; targets miR-34a with release of SIRT1; sponges miR-218-5p releasing downstream SEC61A1 from repression; also competes with miR-4443 and miR-218-5p that promotes COMMD8 expression; interact with miR-527 facilitating BRF2 expression; antagonizes DHX36 (199-206) |
| MSL3P1 | a protein complex including MSL3P1. homologous to the drosophila MLS complex is responsible for histone H4 acetylation, critical for DNA damage response and double-strand break repair histone H4 acetylation (207,208) |
| NCBP2-AS2 | represses oncogenic signaling (KRAS) in HCC, associated with increased β -catenin and glycogen synthase kinase 3 β (GSK-3 β) phosphorylation, engaged in damage response in ES; abundant in CAF, promotes VEGFA secretion and VEGFR signaling in EC (209-212) |
| NNT-AS1 | engaged in the MAPK/Slug signaling pathway; competes with miR-363 for CDK6; sponges miR-142-3p with activation of the ZEB1 axis; sponging miR-424 releases E2F1 from repression; sponging miR-320a increases beta-catenin, RUNX2 and IGF-1R expression and Akt activation, also sponges miR-129-5p and miR-363 (213-219) |
| NOP14-AS1 | strong evidence for not drawing conclusion from sense-antisense pairs on regulatory mechanisms (220) |
| NORAD | repressive or oncogenic; sponges miR-608 releasing FOXO6; sponges miR-615-3p releasing JunB; sponges miR-590 releases SIP1; targets miR-373 releasing Wee1; upregulates TGF β and inhibits the interaction of importin β 1 with Smad3, inhibiting nuclear accumulation; competes with miR-125a-3p releasing RhoA; binds the RNA binding SAM68 (KHDRBS1); required for antagonizing Pumilio contributing to genomic stability maintenance; sponges miR-136-5p (221-231) |
| NUDT16P1 | possibly engaged in Alzheimer disease by causing aggregates with β -amyloid (232) |
| OIP5-AS1 | targets miR-410 releasing Wnt7b/b-catenin; sponges miR-129-5p, releasing SOX2; targets miR223 with release of CDK14; targets miR-378-3p which also releases CDK4 and CDK6; binds piR-30188 and miR-367-3p releasing CEBPA creating a feedback loop via downstream TRAF4; sponges miR-424 releasing RNA binding protein HUR (233-240) |
| OLMALINC | critical for oligodendrocyte maturation (241) |
| OTUD6B-AS1 | regulates apoptosis and proliferation via cyclinD1; may be suppressive, decreases Wnt-b-catenin and EMT-related proteins may regulate apoptosis in systemic sclerosis (242,243) |
| PAX8-AS1 | can repress or promote cancer; targets miR-17-5p suppressing PTEN, CDKN1A and ZEB4; inhibited by Myc (244-247) |
| PCBP1-AS1 | one of the hub ncRNA in cancer; belongs to autophagy-related lncRNA with upregulation of several cancer related pathways (38,248) |
| PPP1R14BP3 | may be engaged in modulating RNA-binding E3 ubiquitin ligases (249) |
| PPP1R26-AS1 | oncogenic in triple- breast cancer, regulates TGF β -Jak/STAT pathway (250) |
| PROX1-AS1 | promotes proliferation and migration via FGFR1 activation; body mass associated, linked to type 2 diabetes (251,252) |
| PSMA3-AS1 | forms a duplex with PSAM3 promoting PSMA3 transcription and stability, which is associated with proteasome inhibitor sensitivity (multiple myeloma associated with OS) (253). |
| PVT1 | involved in many tumor progression, the promoters of PVT1 and MYC are closely located and compete for engagement with four intragenic enhancers in the PVT1 locus, thereby allowing the PVT1 promoter to regulate pause release of MYC transcription via promoter competition, but only from the same chromosome; associated with EZH2 the association being required for p15 and p16 repression; interacts with FOXM1 creating a positive feedback loop; sponges miR-448 with release of SERBP1, sponges miR-190a-5p and -488-3p with release of Myocyte enhancer factor 2C (MEF2C) and upregulation of JAGGED1; binds miR-149 with release of IL1 β and additional inflammatory cytokines; many additional miRNA sponges being reported (254-266) |
| RNASEH1-AS1 | binds to the DEAH box polypeptide 36 (DHX36) RNA helicase via its G-quadruplex-forming sequence and inhibits DHX36 unwinding antagonizing DHX36 in CoCa (199) |
| RNF216P1 | interacts with RIP, inhibits TNF- & IL1-induced NF κ B activation (267,268) |
| RPARP-AS1 | one of the genes linked to autism (269) |
| RPL13P12 | RPA-ssDNA complexes activate Rad3-related (ATR) kinase, which repairs replication forks during stress, the DNA damage response is impaired by RPA modulation (270,271) |
| RPL14P1 | abundant in the genome, a comparison of ribosomal pseudogenes awaits functional annotation (272) |
| RPL18AP3 | possibly RNA-binding E3 ubiquitin ligases (249) |
| RPL32P3 | essential components of the spliceosome are RNA binding protein (RBP), most notably heterogeneous nuclear ribonucleoprotein L (HNRNPL) that directly regulate the alternative splicing of a set of RNAs and also regulate circular RNA formation via back splicing. HNRNPL aberrantly expression is abundant in cancer (273) |
| RPL4P4 | see (272) |
| RPLP0P6 | see (272), also engaged in ubiquitin-proteasome activity in ES (274) |
| RPS13P2 | see (272) |
| RPS23P8 | see (272) |
| RPS28P7 | see (272) |
| RPS4XP22 | see (272) |
| SBDSP1 | associated with the ribosomopathy Swachman-Diamond syndrome, where SBDS controls the final step in cytoplasmic 60S ribosomal subunit maturation to a quality control of structural and functional integrity of the nascent particle that is distorted by SBDSP1, promotes CoCa invasion acting as hub gene in NF κ B interactions (275-280) |
| SCAND2P | possibly engaged in alternative polyadenylation (281) |
| SLC25A25-AS1 | tumor suppressor that mitigates ERK and p38 signaling (282) |

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| SNHG1 | small nucleolar host gene, induced by SP1; directly interacts with Polycomb Repressive Complex 2 (PRC2) and modulate the histone methylation of promoter of Kruppel like factor 2 (KLF2) and Cyclin dependent kinase inhibitor 2B (CDKN2B) in the nucleus; transfer of miR-21 into the nucleus promotes SNHG1 expression that promotes Akt activation; promotes cell proliferation by regulating p53; interferes with multiple miRNA, e.g. competes miR-195-5p releasing PDCD4, targets miR-154-5p and -376b-3p with release of FDX1; targets miR-101-3p with ROCK1 release from repression; targeting miR-497 releases IGF1R from repression; represses miR-140 with downstream ADAM10 release; targets miR-195 releasing BCL2L2; sponges miR-154-5p releasing cyclinD2 (CCND2); sponges miR-302, -372, -373, -520 which leads to TGFB2/SMAD3 and RAB11A/Wnt/ β -catenin pathways activation; targeting miR-199a and miR-18a promotes angiogenesis partly via release of HIF1 α and VEGF signaling (283-293) |
| SNHG10 | SNHG10 acts upstream of its homolog SCARNA13, it sponges miR-150-5p and interacts with RPL4 mRNA to increase c-Myb; which enhances SNHG10 and SCARNA13 by regulating promoter activity creating a feedback loop; the small nucleolar SNHG10 also is enriched in CD47+ EV, but small nuclear RNA are not enriched (294,295) |
| SNHG12 | similar to SNHG1, sponges a large range of miRNA, e.g. miR-195 contribution to Wnt/ β -catenin activation; sponges miR-133b; sponges miR-199a activating sirtuin 1 (SIRT1) that leads to AMPK activation; targets miR-103-3p that targets FDX1; targets miR-320a with release of Myeloid cell leukemia 1 (MCL1); associates with and stabilizes HuR; SNHG12-miR-195-SOX5 works in a feedback loop; SNHG12-miR-195-5p promotes Notch2-Notch signaling pathway activation (296-303) |
| SNHG15 | expression regulated by Myc; stabilizes Slug by preventing degradation in the proteasome; may be involved in NF κ B signaling activation; targets several miRNA, beside others miR-338-3p that regulates FKBP prolyl isomerase 1A (FKBP1A) as well as FOS and RAB14; interacts with and regulates AIF and via AIF BAG3 and ERBB3; upregulated YAP1 by sponging miR-200a-3p; regulating CDK14 protein via sponging miR-486; sponges miR-21 1-3p with upregulation of EMT genes; targets miR-153 with release of VEGFA and Cdc42 promoting EC proliferation (304-313) |
| SNHG16 | regulated by the Wnt signaling pathway; binds Ago with 27 AGO/miRNA target sites; sponges beside others miR1301 promoting BCL9 expression; regulates miR-98-5p; regulates the miR-15a/16 cluster with upregulation of inflammatory genes; targets miR-205 with upregulation of ZEB1; also targets the 3'UTR of Stearoyl-CoA Desaturase (SCD) suggesting a role in lipid metabolism. (314-321) |
| SNHG17 | associated with EZH2 required for epigenetic repression of cyclin-dependent protein kinase inhibitors p15 and p57 epigenetic silencing p57 (322-324) |
| SNHG19 | negatively correlated with Alzheimer, synaptic vesicle cycle and endocytosis overrepresented (325) |
| SNHG3 | repressing KLF2 and p21 via recruiting enhancer of EZH2 to the promoter; targets miR-384 with WEE1 release promoting migration/invasion; targets miR-326 enhancing SMAD3 and ZEB1, targets miRNA-151a-3p releasing RAB22 A; related to energy metabolism by regulating miRNAs and EIF4AIII with target sites on PKM, PDHB, IDH2, and UQCRH; sponges miR-182-5p upregulating c-Myc; (326-331) |
| SNHG5 | methioninase (METase) promotes SNHG5 upregulation that competes with miR-20a; sponges miR-26a and associates with ROCK1 and SOX2; sponges miR-377 releasing Casp1; sponges miR-182-5p releasing cMyc; stabilizes 121 target transcripts by blocking their degradation by STAU1; acts via the miR-32/KLF4 axis; prevents MTA2 translocation from the cytoplasm into the nucleus, significantly increased acetylation of histone H3 and p53 might affect trapping MTA2 in the cytosol interfering with nucleosome remodeling and the histone deacetylation complex (331-339) |
| SNHG6 | activates TGF- β /Smad signaling pathway by targeting UPF1 and ZEB1 regulation; repressed p21 transcription through recruiting EZH2 to the p21 promoter, yet can also suppress EZH2 via JNK activation; promoted expression of MAT2A by suppressing direct binding of miR-1297, suppressing production of the universal methyl donor S-adenosylmethionine (SAME) impacts global DNA methylation levels; sponges miR-1001 with activation of Wnt/ β -catenin; targets miR-26a-5p activating the MAPK6 pathway; sponging miR-26a-5p regulates E2F7; sponges miR-101-3p increasing ZEB1 at the posttranscriptional level and silences at the transcriptional level p27 by recruiting EZH2 to the promoter (340-348) |
| SNHG7 | targets miR-34a with upregulation of Notch1, BCL-2, CDK6, and SMAD4; sponges miR-503 with release of Cyclin D1; targets miR-5095 with release of CTNNB1; promotes increase of Fas apoptotic inhibitory molecule2 (FAIM2) (349-353) |
| SNHG8 | sustains SC proliferation by promoting the transcription of ribosomal proteins; targets miR-542-3p with release of CCND1/CDK6 and Caspase-3 activation; targets miR-152 releasing c-MET; targets mi R-149 releasing phosphatase Mg2+/Mn2+ dependent 1F (PPM1F) from repression (354-357) |
| SNHG9 | targets miR-199a-5p promoting Wnt2 axis activation; cooperates with additional lncRNA (358,359) |
| SVIL-AS1 | cooperates with addition lncRNA in fibroblast like cells promoting rheumatoid arthritis (360) |
| THUMP3-AS1 | forms with additional lncRNA and 61 miRNA a network a network in regulating cancer progression (361) |
| TNRC6C-AS1 | inhibits STK4 by promoting methylation and reducing MST1 and LATS1/2 proteins with decrease of YAP1 phosphorylation; targets miR-129-5p with upregulation of UNC5B (362,363) |
| TRIM52-AS1 | tumor suppressor in RCC (364) |
| TRPM2-AS | ELK1-induced overexpression, targets miR-195 promoting high-mobility group AT-hook 1 (HMGA1) upregulation; sponges miR-140-3p releasing PYCR1; activates the p53-p66shc pathway; regulates phagosomal acidification essential for bacterial killing by macrophages; functions as a transducer converting oxidative stress into Ca(2+) signaling, critical in ROS promoted diseases and NK degranulation (365-370) |
| VPS9D1-AS1 | cancer promoting activity, upregulating c-Myc by competing miR-184 (371) |
| WAC-AS1 | germline specific, binds P-Element induced wimpy testis (PIWI) proteins, the interacting RNA are ncRNA suggested to be also important in cancer (372,373) |
| WASH3P | Proteins of the Wiskott-Aldrich syndrome protein (WASP) are nucleation-promoting factors for the Arp2/3 complex, driving the generation of branched actin filaments engaged in lamellipodia/filopodia formation, endocytosis, phagocytosis and the generation of cargo-laden vesicles; also engaged in promoting actin dynamics at the centrosome; in the nucleus they serve as molecular platforms for the assembly of epigenetic and transcriptional machinery (374-377) |

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| ZEB1-AS1 | competes with miR-200b releasing Fascin-1 (FSCN1); binds and stabilizes IL11 strengthening STAT3 signaling; binds and recruits histone methyltransferase MLL1 to the promoter region of ZEB1, inducing H3K4me3 modification with activating ZEB1 transcription; sponging miR-200s contributes to ZEB1 expression; suppresses p15 expression; supports MMP2, MMP9, N-cadherin, and Integrin-β1 and decreases E-cadherin expression (378-384) |
| ZFAS1 | sponges miR-135a; via competing miRNA associated with translation, rRNA processing, intra-Golgi vesicle-mediated transport, ribosome, and ubiquitin-mediated proteolysis; targets miR-200b promoting Wnt/β-catenin signaling; competes miR/10a releasing SKA1; competes with miR-150 releasing Myb and Sp1; targets miR-150-5p releasing Sp1; sponges miR-329 and -484; binds and inhibits SERCA2a (sarcoplasmic reticulum Ca ²⁺ -ATPase 2a); interacts with EZH2 and LSD1/CoREST to repress KLF2 and NKD2 transcription; sponging miR-150 releases ZEB1, MMP14 and MMP16 from repression (385-401) |
| ZNF670-ZNF695 | example of a nc conjoined gene, conjoined genes regulating genomic evolution (402,403) |
| ZNF702P | ncRNA with N6-methyladenosine enriched in 3'UTR near stop codon. VIRMA & METTL3 core components of mRNA methylation near stop codon (281) |
| ZNF767P | may regulate RNA splicing, HNRNPL important component of RNA binding protein (RBP), relevant in ProstateCa for androgen receptor (273) |

* , *: red: upregulated in wt-TEX treated Tspan8kd tumor cells, green: downregulated in wt-TEX treated Tspan8kd tumor cells

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Table S10

Alphabetic list of full names of symbols for protein coding genes

| Symbol | Full name |
|-----------------------|--|
| Aamdc | adipogenesis associated, Mth938 domain containing |
| Aars | alanyl-tRNA synthetase |
| Aatf | apoptosis antagonizing transcription factor |
| Abca16 | ATP-binding cassette, subfamily A (ABC1), member 16 |
| Abhd13 | abhydrolase domain containing 13 |
| ABL1 | ABL proto-oncogene 1, non-receptor tyrosine kinase |
| Abt1 | activator of basal transcription 1 |
| Acaa2 | acetyl-CoA acyltransferase 2 |
| Acat2 | acetyl-Coenzyme A acetyltransferase 3 |
| Acpl2 | acid phosphatase-like 2 |
| Acs1 | acyl-CoA synthetase long-chain family member 1 |
| Acs14 | acyl-CoA synthetase long-chain family member 4 |
| Acss2 | acyl-CoA synthetase short-chain family member 2 |
| Acvr1 | activin A receptor type 2 |
| Acy3 | aspartoacylase (aminocyclase) 3 |
| Adam10, 15, 9 | a disintegrin and metallopeptidase domain 10, 15 (metargidin), 9 |
| Adamts1, 15, 2, 7 | ADAM metallopeptidase with thrombospondin type 1 motif, 1, 15, 2, 7 |
| Adap1 | ArfGAP with dual PH domains 1 |
| Adarb1 | adenosine deaminase, RNA-specific, B1 |
| Adcy9 | adenylate cyclase 9 |
| Add3 | adducin 3 (gamma) |
| Adgrb1 | adhesion GPCR B1 |
| Adhfe1 | alcohol dehydrogenase, iron containing, 1 |
| Adm | adrenomedullin |
| Adora2b | adenosine A2B receptor |
| Adrbk1 | adrenergic, beta, receptor kinase 1 |
| Aen | apoptosis enhancing nuclease |
| Agfg2 | ArfGAP with FG repeats 2 |
| Agps | alkylglycerone phosphate synthase |
| Agrn | Agrin |
| Agtr1a | angiotensin II receptor, type 1a |
| Ahdcd1 | AT hook, DNA binding motif, containing 1 |
| Ahi1 | Abelson helper integration site 1 |
| Aig1 | androgen-induced 1 |
| Akap13, 17b, 2 | A kinase (PRKA) anchor protein 13, 17B, 2 |
| Akna | AT-hook transcription factor |
| Akr1c13, c15, c19, e2 | aldo-keto reductase family 1, member C13, member C-like 1, member C19, member E2 |
| Akt | Akt serine/threonine kinase 1 |
| Alcam | activated leukocyte cell adhesion molecule |
| Aldh3a1 | aldehyde dehydrogenase 3 family, member A1 |
| Alix/PDCD6IP | programmed cell death 6 interacting protein |
| Alk | ALK receptor tyrosine kinase |
| Alkbh1 | alkB, alkylation repair homolog, histone H2A dioxygenase |
| Alkbh3 | alkB homolog 3 alpha-ketoglutarate-dependent dioxygenaseprovided |
| Ammecr11 | AMME chromosomal region gene 1-like |
| Angel1 | angel homolog 1 |
| Angptl4 | angiopoietin-like 4 |
| Ankrd1, 28, 37, 50 | ankyrin repeat domain 1, 28, 37, 50 |
| Anks3, 6 | ankyrin repeat and sterile alpha motif domain containing 3, 6 |
| Anpep | alanyl (membrane) aminopeptidase |
| Antxr2 | Antxr cell adhesion molecule 2 |
| Anxa1, 3, 6 | annexin A1, A3, A6 |
| Aoc3 | amine oxidase, copper containing 3 |
| Aox1 | aldehyde oxidase 1 |
| Ap2a2, s1 | adaptor-related protein complex 2, alpha 2 subunit, sigma 1 subunit |
| Ap3s1 | adaptor-related protein complex 3, sigma 1 subunit |
| Apex1 | APEX nuclease (multifunctional DNA repair enzyme) 1 |
| Apol9a | apolipoprotein L 9a |
| Aqp1 | aquaporin 1 |
| Arc | activity-regulated cytoskeleton-associated protein |
| Areg | amphiregulin |
| Arf4 | ADP-ribosylation factor 4 |
| Arg1 | arginase, liver |
| Arglu1 | arginine and glutamate rich 1 |
| Arhgap11a, 18, 22, 28 | Rho GTPase activating protein 11A, 18, 22, 28 |
| Arhgef2 | rho/rac guanine nucleotide exchange factor (GEF) 2 |
| Arid3a | AT rich interactive domain 3A (Bright like) |
| Arl15 | ADP-ribosylation factor-like 15 |
| Arl2bp | ADP-ribosylation factor-like 2 binding protein |
| Arl8b | ADP-ribosylation factor-like 8B |
| Arnt2 | aryl hydrocarbon receptor nuclear translocator 2 |
| Arpc1a, 5, 15 | actin related protein 2/3 complex, subunit 1A, subunit 5, subunit 5-like |
| Arsi | arylsulfatase family, member I |

Table S10 continued

| Symbol | Full name |
|-----------------------|--|
| Artn | artemin |
| Asf1b | ASF1 anti-silencing function 1 homolog B |
| Asl | argininosuccinate lyase |
| Asns | asparagine synthetase |
| Aspm | asp (abnormal spindle) homolog, microcephaly associated |
| Aspn | asporin |
| Atf3, 4, 6 | activating transcription factor 3, 4 (tax-responsive enhancer element B67), 6 |
| Atg12, 16l2 | ATG12 autophagy related 12 homolog, 16-like 2 |
| Atp2c1 | ATPase, Ca ⁺⁺ transporting, type 2C, member 1 |
| Atp5j2 | ATP synthase, H ⁺ transporting, mitochondrial Fo complex, subunit F2 |
| Atp6v0b, 1a, 1c1, 1d | ATPase, H ⁺ transporting, lysosomal V0 subunit B, V1 subunit A, V1 subunit C1, V1 subunit D |
| Atp8b2 | Atpase, class I, type 8B, member 2 |
| Aurka | aurora kinase A |
| Azin1 | antizyme inhibitor 1 |
| Bard1 | BRCA1 associated RING domain 1 |
| Bax | Bcl2 associated X, apoptosis regulator |
| Bbc3 | Bcl-2 binding component 3 |
| Bcap29 | B-cell receptor-associated protein 29 |
| Bcar1 | breast cancer anti-estrogen resistance 1 |
| Bcat1 | branched chain amino acid transaminase 1, cytosolic |
| Bcl11a | B-cell CLL/lymphoma 11A (zinc finger protein) |
| Bcl2l1 | Bcl2-like 1 |
| Bdh2 | 3-hydroxybutyrate dehydrogenase, type 2 |
| Bf | complement factor B |
| Bhlhe40 | basic helix-loop-helix family, member e40 |
| Bhmt | betaine-homocysteine S-methyltransferase |
| Bicc1 | bicaudal C homolog 1 |
| Birc5 | baculoviral IAP repeat-containing 5 |
| Bloc1s1 | biogenesis of lysosomal organelles complex-1, subunit 1 |
| Bmp2, 4 | bone morphogenetic protein 2, 4 |
| Bmper | BMP-binding endothelial regulator |
| Bnip3, 3l | BCL2/adenovirus E1B interacting protein 3, 3-like |
| Bod1 | bioorientation of chromosomes in cell division 1 |
| Bola3 | bolA homolog 3 (E. coli) |
| Bop1 | block of proliferation 1 |
| Borcs7, 8 | BLOC-1 related complex subunit 7, 8 |
| Brip1 | BRCA1 interacting protein C-terminal helicase 1 |
| Bst1 | bone marrow stromal cell antigen 1 |
| Btd | biotinidase |
| Btg1, 2, 3 | B-cell translocation gene 1, 2, 3 |
| Bub1 | budding uninhibited by benzimidazoles 1 homolog, 1 homolog beta |
| C1orf189 homolog | RGD1564171 |
| C1qtnf6 | C1q and tumor necrosis factor related protein 6 |
| C1r, 3, 4b | complement component 1, r subcomponent, 3, 4B |
| Cables1 | Cdk5 and Abl enzyme substrate 1 |
| Cacybp | calcyclin binding protein |
| Calhm2 | calcium homeostasis modulator 2 |
| Calml4 | calmodulin-like 4 |
| Car11 | carbonic anhydrase 11 |
| Cars | cysteinyl-tRNA synthetase |
| Casp12, 4, 7 | caspase 12, 4, 7 |
| Casq1 | calsequestrin 1 (fast-twitch, skeletal muscle) |
| Catsper2 | cation channel, sperm associated 2 |
| Cav1 | caveolin 1, caveolae protein |
| Cby3 | chibby homolog 3 |
| Ccar1 | cell division cycle and apoptosis regulator 1 |
| Ccdc101, 112, 167 | coiled-coil domain containing 101, 112, 167 |
| Ccdc28b, 69, 99 | coiled-coil domain containing 28B, 69, 99 |
| Ccl19, 2, 20, 27 | chemokine (C-C motif) ligand 19, 2 (Mcp1), 20 (Mip3a), 27 |
| Ccna2, b1, b2, e1, l1 | cyclin A2, B1, B2, C, E1, L1 |
| Ccnd1 | cyclin D1 |
| Ccnyl1 | cyclin Y-like 1 |
| Ccrn4l | CCR4 carbon catabolite repression 4-like |
| Ccser2 | granule cell antiserum positive 14 |
| Cct8 | chaperonin containing Tcp1, subunit 8 (theta) |
| Cd1d1 | CD1d1 molecule |
| Cd24 | CD24 molecule |
| Cd302 | CD302 molecule |
| Cd36 | CD36 molecule (thrombospondin receptor) |
| Cd3eap | CD3e molecule, epsilon associated protein |
| CD44 | CD44 molecule |
| Cd48 | CD48 molecule |
| Cd54 | CD54, ICAM1 (Intercellular adhesion molecule 1) |
| Cd62L | CD62L, Selectin L |
| Cd68 | CD68 molecule |

Table S10 continued

| Symbol | Full name |
|----------------------|---|
| Cd74 | CD74 molecule, major histocompatibility complex, class II invariant chain |
| Cd81 | CD81 molecule |
| Cd86 | CD86 molecule |
| Cda | cytidine deaminase |
| Cdc20 | cell division cycle 20 homolog |
| Cdc42bpg | CDC42 binding protein kinase gamma (DMPK-like) |
| Cdc42ep5 | CDC42 effector protein (Rho GTPase binding) 5 |
| Cdc42se2 | CDC42 small effector 2 |
| Cdc45 | cell division cycle 45 homolog |
| Cdca3 | cell division cycle associated 3 |
| Cdh 5, 16 | cadherin 5, 16 |
| Cdk2 | cyclin dependent kinase 2 |
| Cdkn1a, 2c, 2d | cyclin-dependent kinase inhibitor 1A, 2C (p18, inhibits CDK4), 2D |
| Cdkn2aip | CDKN2A interacting protein |
| Cdpf1 | similar to 2210021J22Rik protein |
| Ceacam10 | carcinoembryonic antigen-related cell adhesion molecule 10 |
| Cebpd, g | CCAAT/enhancer binding protein (C/EBP), delta, gamma |
| Cemip2 | cell migration inducing hyaluronidase 2 |
| Cenpf | centromere protein F, J, Q, T, W |
| Cep250, 55 | centrosomal protein 250, 55 |
| Cept1 | choline/ethanolamine phosphotransferase 1 |
| Cers1 | ceramide synthase 1 |
| Ces1a, 1d, 5a | carboxylesterase 1A, 1D, 5A |
| Cfap100 | cilia and flagella associated protein 100 |
| Cfap100 | cilia and flagella associated protein 100 |
| Cfb, h | complement factor B, H |
| Cfl1 | cofilin |
| Chaf1b | chromatin assembly factor 1, subunit B (p60) |
| Chchd6 | coiled-coil-helix-coiled-coil-helix domain containing 6 |
| Chd2 | chromodomain helicase DNA binding protein 2 |
| Chka | choline kinase alpha |
| Chm | choroideremia (Rab escort protein 1) |
| Ciart | hypothetical gene supported by NM_017187 |
| Cisd1, 2 | CDGSH iron sulfur domain 1, 2 |
| Ciz1 | CDKN1A interacting zinc finger protein 1 |
| Ckap4 | cytoskeleton-associated protein 4 |
| Cklf | chemokine-like factor |
| Clec11a | C-type lectin domain family 11, member A |
| Clic2 | chloride intracellular channel 2 |
| Clk1 | CDC-like kinase 1 |
| Clmp | CXADR-like membrane protein |
| Cipp | CipP caseinolytic peptidase, ATP-dependent, proteolytic subunit homolog (E. coli) |
| Clrn2 | clarin 2 |
| Clu | clusterin |
| Cnfn | cornifelin |
| Cnn3 | calponin 3, acidic |
| Cntf | Ciliary neurotrophic factor |
| Cog8 | component of oligomeric golgi complex 8 |
| Col12a1,14a1,1a1,1a2 | collagen, type XII, alpha 1, type XIV, alpha 1, type I, alpha 1, 2 |
| Col3a1,4,5a1,6a1,6a2 | collagen, type III, alpha 1, type V, alpha 1, type VI, alpha 1, alpha 2 |
| Comm1d1 | copper metabolism (Murr1) domain containing 1 |
| Comtd1 | catechol-O-methyltransferase domain containing 1 |
| Cops7a | COP9 constitutive photomorphogenic homolog subunit 7A |
| Coq8b | aaRF domain containing kinase 4 |
| Cotl1 | coactosin-like 1 |
| Cox6a2,b1,b2,7a2,b | cytochrome c oxidase subunit VIA2, VIB1, VIB2, subunit VIIA2, B |
| Cp | ceruloplasmin |
| Cpeb1, 4 | cytoplasmic polyadenylation element binding protein 1, 4 |
| Cplx2 | complexin 2 |
| Cpne5 | copine V |
| Cr1l | complement component (3b/4b) receptor 1-like |
| Creb3l1 | cAMP responsive element binding protein 3-like 1 |
| Crim1 | cysteine rich transmembrane BMP regulator 1 (chordin like) |
| Crip2 | cysteine-rich protein 2 |
| Crtap | cartilage associated protein |
| Cry1 | cryptochrome 1 (photolyase-like) |
| Cryab, l1 | crystallin, alpha B, lambda 1 |
| Csda | cold shock domain protein A |
| Csf11 | colony stimulating factor 1 receptor |
| Csf2 | Granulocyte-macrophage colony stimulating factor (Gmcsf) |
| Csgalnact1 | chondroitin sulfate N-acetylgalactosaminyltransferase 1 |
| Csrnp1 | cysteine-serine-rich nuclear protein 1 |
| Csrp2 | cysteine and glycine-rich protein 2 |
| Cst6 | cystatin E/M |
| Ctf1 | cardiotrophin 1 |

Table S10 continued

| Symbol | Full name |
|--------------------|--|
| Cth | cystathionase (cystathionine gamma-lyase) |
| Ctnnal1 | catenin (cadherin associated protein), alpha-like 1 |
| Ctps1 | CTP synthase |
| Ctsh, k | cathepsin H, K |
| Ctu1 | cytosolic thiouridylase subunit 1 homolog |
| Ctxn1, 3 | cortexin 1, 3 |
| Cul2 | cullin 2 |
| Cuta | cutA divalent cation tolerance homolog |
| Cx3cl1 | chemokine (C-X3-C motif) ligand 1 |
| Cx3cr1 | chemokine (C-X3-C motif) receptor 1 |
| Cxcl1, 2, 3, 5, 6 | chemokine (C-X-C motif) ligand 1 (CINC-1), 2 (CINC-2a), 3 (CINC-3), 5, 6 (LIX) |
| Cxcl10, 12, 13 | chemokine (C-X-C motif) ligand 10, 12, 13 |
| Cxcr2, 4, 5, 7 | chemokine (C-X-C motif) receptor 2, 4, 5, 7 |
| Cyb5r3, basc3 | cytochrome b5 reductase 3 b, ascorbate dependent 3 |
| Cyhr1 | cysteine and histidine rich 1 |
| Cyp26b1, 3a9 | cytochrome P450, family 26, subfamily b, polypeptide 1, family 3, subfamily a, polypeptide 9 |
| Cyp4a8, 51 | cytochrome P450, family 4, subfamily a, polypeptide 8, family 51 |
| Cyr61 | cysteine-rich, angiogenic inducer, 61 |
| Cyth3 | cytohesin 3 |
| Da1-10 | Da1-10-like |
| Daam1 | dishevelled associated activator of morphogenesis 1 |
| Dag | diacylglycerol |
| Dars | aspartyl-tRNA synthetase |
| Dbp | D site of albumin promoter (albumin D-box) binding protein |
| Dbt | dihydrolipoamide branched chain transacylase E2 |
| Dcaf6 | DDB1 and CUL4 associated factor 6 |
| Dclk1 | doublecortin-like kinase 1 |
| Dcn | decorin |
| Dctpp1 | dCTP pyrophosphatase 1 |
| Dcun1d1 | DCN1, defective in cullin neddylation 1, domain containing 1 |
| Ddah1 | dimethylarginine dimethylaminohydrolase 1 |
| Ddit3 | DNA-damage inducible transcript 3 |
| Ddx46, 50, 52, 59 | DEAD (Asp-Glu-Ala-Asp) box polypeptide 46, 50, 52, 59 |
| Depp1 | DEPP1, autophagy regulator |
| Derl3 | Der1-like domain family, member 3 |
| Dexi | dexamethasone-induced transcript |
| Dgka | diacylglycerol kinase, alpha |
| Dhodh | dihydroorotate dehydrogenase (quinone) |
| Dhrs1 | dehydrogenase/reductase (SDR family) member 1 |
| Dhx58 | DEXH (Asp-Glu-X-His) box polypeptide 58 |
| Dhx9 | DEAH (Asp-Glu-Ala-His) box polypeptide 9 |
| Diras1 | DIRAS family, GTP-binding RAS-like 1 |
| Dlgap5 | discs, large homolog-associated protein 5 |
| Dmtf1 | cyclin D binding myb-like transcription factor 1 |
| Dnaja3 | DnaJ (Hsp40) homolog, subfamily A, member 3 |
| Dnajc10, 2, 5, 6 | DnaJ (Hsp40) homolog, subfamily C, member 10, 2, 5, 6 |
| Dnase111 | deoxyribonuclease 1-like 1 |
| Dohh | deoxyhypusine hydroxylase/monooxygenase |
| Dok5 | docking protein 5 |
| Dpep1, 2 | dipeptidase 1 (renal), 2 |
| Dph5 | DPH5 homolog |
| Dpp8 | dipeptidylpeptidase 8 |
| Dqx1 | DEAQ box RNA-dependent ATPase 1 |
| Dse | dermatan sulfate epimerase |
| Dsel | dermatan sulfate epimerase-like |
| Dstn | destrin |
| Duox1 | dual oxidase 1 |
| Dus2l | dihydrouridine synthase 2-like, SMM1 homolog |
| Dusp1, 22, 5, 6, 8 | dual specificity phosphatase 1, 22, 5, 6, 8 |
| Dut | deoxyuridine triphosphatase |
| Dync2li1 | dynein cytoplasmic 2 light intermediate chain 1 |
| E2f1 | E2F transcription factor 1 |
| Ech1 | enoyl CoA hydratase 1, peroxisomal |
| Eci2 | enoyl-Coenzyme A delta isomerase 2 |
| Edem2 | ER degradation enhancer, mannosidase alpha-like 2 |
| Edn1 | endothelin 1 |
| Eef1a2 | eukaryotic translation elongation factor 1 alpha 2 |
| Eef2kmt | family with sequence similarity 86, member A |
| Eefsec | eukaryotic elongation factor, selenocysteine-tRNA-specific |
| Eepd1 | endonuclease/exonuclease/phosphatase family domain containing 1 |
| Efna1, 2 | ephrin A1, 2 |
| Egf | epidermal growth factor |
| Egfr | epidermal growth factor receptor, ERBB1 |
| Egr1, 2 | early growth response 1, 2 |
| Ehd2 | EH-domain containing 2 |

Table S10 continued

| Symbol | Full name |
|-----------------------|---|
| Eif1, 1ax, 1b | eukaryotic translation initiation factor 1, 1A, X-linked, 1B |
| Eif2ak2, 2b3, 2s2 | eukaryotic translation initiation factor 2-alpha kinase 2, 2B subunit 3, 2 subunit 2 beta |
| Eif3e, 3j, 4e, 4e3 | eukaryotic translation initiation factor 3, subunit E, subunit J, 4E, 4E family member 3 |
| Eif4ebp1 | eukaryotic translation initiation factor 4E binding protein 1 |
| Elmsan1 | similar to transcriptional regulating protein 132 |
| Elf1 | E74 like ETS transcription factor 1 |
| Eln | elastin |
| Elovl6 | ELOVL family member 6, elongation of long chain fatty acids |
| Emilin1 | elastin microfibril interfacier 1 |
| Emp2 | epithelial membrane protein 2 |
| Emx1, 2 | empty spiracles homeobox 1, 2 |
| Enc1 | ectodermal-neural cortex 1 |
| Eno2 | enolase 2, gamma, neuronal |
| Epha1, 2, 3 | Eph receptor A1, A2, A3 |
| Ephb1, 3, 4, 6 | Eph receptor B1, B3, B4, B6 |
| Epn3 | epsin 3 |
| Eprs | glutamyl-prolyl-tRNA synthetase |
| Eps8 | epidermal growth factor receptor pathway substrate 8 |
| Epyc | epiphycan |
| Eral1 | Era (G-protein)-like 1 |
| Erb2, 3 | erb-b2 receptor tyrosine kinase 2, 3 |
| Ereg | epiregulin |
| ERK1,2 | mitogen activated protein kinase 1, 3 (Mapk1, 3) |
| Ermard | ER membrane-associated RNA degradation |
| Ero1l | ERO1-like |
| Erp29 | endoplasmic reticulum protein 29 |
| Errfi1 | ERBB receptor feedback inhibitor 1 |
| Esp1l | extra spindle pole bodies homolog 1 |
| Esrra | estrogen related receptor, alpha |
| Etf1 | electron-transfer-flavoprotein, alpha polypeptide |
| Ets2 | v-ets erythroblastosis virus E26 oncogene homolog 2 |
| Etv1, 3 | ets variant transcription factor 1, 3 |
| Eva1c | eva-1 homolog C |
| Exoc3l4 | exocyst complex component 3-like 4 |
| Extl2 | exostoses (multiple)-like 2 |
| Ezr | ezrin |
| F3 | coagulation factor III (thromboplastin, tissue factor) |
| Faap20 | FA core complex associated protein 20 |
| Fabp3, 5 | fatty acid binding protein 3 (muscle and heart), 5 (epidermal) |
| Faf1 | Fas (TNFRSF6) associated factor 1 |
| Fah | fumarylacetoacetate hydrolase |
| Fahd1 | fumarylacetoacetate hydrolase domain containing 1 |
| Fam102b, 110a, 120c | family with sequence similarity 102 member B, 110 member A, 120C |
| Fam129a, 131b, 13a | family with sequence similarity 129 member A, 131 member B, 13 member A |
| Fam162a, 180a, 195b | family with sequence similarity 162 member A, 180 member A, 195 member B |
| Fam227b, 229b, 25a | family with sequence similarity 227 member B, 229 member B, 25 member A |
| Fam43a,50a,53a,57b | family with sequence similarity 43 member A, 50 member A, 53 member A, 57 member B |
| Fam65b, 71f1, 83d | family with sequence similarity 65 member B, 71 member F1, 83 member D |
| Farsb | phenylalanyl-tRNA synthetase, beta subunit |
| Faslg | Tumor necrosis factor ligand superfamily member 6, CD95L |
| Fasn | fatty acid synthase |
| Fat4 | FAT tumor suppressor homolog 4 |
| Faxdc2 | fatty acid hydroxylase domain containing 2 |
| Fbln2, 5 | fibulin 2, 5 |
| Fbxl4 | F-box and leucine-rich repeat protein 4 |
| Fbxo21, 23, 4 | F-box protein 21, only protein 23, protein 4 |
| Fbxw9 | F-box and WD repeat domain containing 9 |
| Fcgbp1l | Fc fragment of IgG binding protein-like 1 |
| Fdps | farnesyl diphosphate synthase |
| Fem1b | fem-1 homolog b |
| FGFR1, 3, 4 | Fibroblast growth factor receptor 1, 3, 4 |
| Fggy | FGGY carbohydrate kinase domain containing |
| Fhl1 | four and a half LIM domains 1 |
| Fibin | fin bud initiation factor homolog (zebrafish) |
| Fkbp5, 7 | FK506 binding protein 5, 7 |
| Fkrp | fukutin related protein |
| Flad1 | flavin adenine dinucleotide synthetase |
| Flt3 | fms-related tyrosine kinase 3 |
| Fmo3 | flavin containing monooxygenase 3 |
| Fn | fibronectin |
| Fos | FBJ osteosarcoma oncogene |
| Fosl1 | fos-like antigen 1 |
| Foxe1, f1, k1, m1, s1 | forkhead box E1 (thyroid transcription factor 2), F1, K1, M1, S1 |
| Foxo3, 4 | forkhead box O3, O4 |
| Fst | follistatin |

Table S10 continued

| Symbol | Full name |
|----------------|--|
| Fut8 | fucosyltransferase 8 (alpha (1,6) fucosyltransferase) |
| Fxyd1 | FXYD domain-containing ion transport regulator 1 |
| Fzd1, 6 | frizzled family receptor 1, 6 |
| Gadd45a, b, g | growth arrest and DNA-damage-inducible, alpha, beta, gamma |
| Gal3st4 | galactose-3-O-sulfotransferase 4 |
| Gale | UDP-galactose-4-epimerase |
| Galnt11, 16, 2 | UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 11, 16, 2 |
| Gart | phosphoribosylglycinamide formyltransferase |
| Gas5, 6 | growth arrest specific 5, 6 |
| Gbp5 | guanylate binding protein 5 |
| Gcat | glycine C-acetyltransferase |
| Gchfr | GTP cyclohydrolase I feedback regulator |
| Gcsh | glycine cleavage system protein H (aminomethyl carrier) |
| Gdf15 | growth differentiation factor 15 |
| Gemin4 | gem (nuclear organelle) associated protein 4 |
| Gfra2 | GDNF family receptor alpha 2 |
| Gga1 | golgi associated, gamma adaptin ear containing, ARF binding protein 1 |
| Ggh | gamma-glutamyl hydrolase (conjugase, folypolygammaglutamyl hydrolase) |
| Ghitm | growth hormone inducible transmembrane protein |
| Gins1, 4 | GINS complex subunit 1 (Psf1 homolog), subunit 4 (Sld5 homolog) |
| Gja4 | gap junction protein, alpha 4 |
| Gli2 | GLI family zinc finger 2 |
| Glipr1 | GLI pathogenesis-related 1 |
| Glrx1 | glutaredoxin 1 |
| Gls2 | glutaminase 2 (liver, mitochondrial) |
| Glt8d1, 2 | glycosyltransferase 8 domain containing 1, 2 |
| Gltp | glycolipid transfer protein |
| Glul | glutamate-ammonia ligase |
| GM3 | ganglioside 3 |
| Gmeb1 | glucocorticoid modulatory element binding protein 1 |
| Gmfb | glia maturation factor, beta |
| Gmnn | geminin |
| Gna14 | guanine nucleotide binding protein, alpha 14 |
| Gng5 | guanine nucleotide binding protein (G protein), gamma 5 |
| Gnl3 | guanine nucleotide binding protein-like 3 (nucleolar) |
| Gns | glucosamine (N-acetyl)-6-sulfatase |
| Got1 | glutamic-oxaloacetic transaminase 1, soluble (aspartate aminotransferase 1) |
| Gpatch11 | coiled-coil domain containing 75 |
| Gpcpd1 | glycerophosphocholine phosphodiesterase GDE1 homolog |
| Gpnmb | glycoprotein (transmembrane) nmb |
| Gpr162, 88, 89 | G protein-coupled receptor 162, 88, 89 |
| Gprasp2 | G protein-coupled receptor associated sorting protein 2 |
| Gprc5b | G protein-coupled receptor, family C, group 5, member B |
| Gpsm1, 2 | G-protein signaling modulator 1, 2 |
| Gpx1, 7 | glutathione peroxidase 1, 7 |
| Gramd1b | GRAM domain containing 1B |
| Grem1 | gremlin 1 |
| Grin2d | glutamate receptor, ionotropic, N-methyl D-aspartate 2D |
| Grm6 | glutamate metabotropic receptor 6 |
| Gsn | gelsolin |
| Gsta3, 4, 5, 6 | glutathione S-transferase A3, A4, A5, A6 |
| Gstm1, 2, 3, 5 | glutathione S-transferase mu 1, 2, 7, 5 |
| Gtf2e1 | general transcription factor IIE, polypeptide 1 (alpha subunit) |
| Gtbbp2 | GTP binding protein 2 |
| Gtse1 | G-2 and S-phase expressed 1 |
| Guf1 | GUF1 GTPase homolog |
| Gusb | glucuronidase, beta |
| Gzmc | granzyme C |
| H1f0 | H1 histone family, member 0 |
| H2afj, x | H2A histone family, member J, member X |
| H2ai, 2ai1 | similar to histone 1, H2ai, H2ai-like |
| H2h3c2, 3f3b | histone cluster 2 H3c2, H3 family 3B |
| Hadh | hydroxyacyl-CoA dehydrogenase |
| Hadhb | hydroxyacyl-CoA dehydrogenase/3-ketoacyl-CoA thiolase/enoyl-CoA hydratase, beta subunit |
| Hapln3 | hyaluronan and proteoglycan link protein 3 |
| Hars2 | histidyl-tRNA synthetase 2-like |
| Has1 | hyaluronan synthase 1 |
| Haus8 | HAUS augmin-like complex, subunit 8 |
| Havcr1, 2 | hepatitis A virus cellular receptor 1, 2 (Tim1, 3) |
| Hax1 | HCLS1 associated protein X-1 |
| Hbegf | heparin-binding EGF-like growth factor |
| Hbs1l | Hbs1-like |
| Hdc | histidine decarboxylase |
| Hebp1 | heme binding protein 1 |
| Herpud1 | homocysteine-inducible, endoplasmic reticulum stress-inducible, ubiquitin-like domain member 1 |

Table S10 continued

| Symbol | Full name |
|----------------------------|---|
| Herpud2 | HERPUD family member 2 |
| Hes7 | hairy and enhancer of split 7 |
| Hexb | hexosaminidase B |
| Hexim1 | hexamethylene bis-acetamide inducible 1 |
| Hid1 | similar to CG8841-PA |
| Hif1a | hypoxia-inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor) |
| Higd1a | HIG1 hypoxia inducible domain family, member 1A |
| Hip1r | huntingtin interacting protein 1 related |
| Hist1h1a, b, c, d | histone cluster 1, H1a, H1b, H1 VAR.1, H1d |
| Hist1h2af, i, il, k, n | histone cluster 1, H2af, H2ai, H2ai-like, H2ak, H2an |
| Hist1h2bd, h, k, l, m | histone cluster 1, H2bm, H2bh, H2bc, H2bl, H2bm |
| Hist1h4b | histone cluster 1, H4b |
| Hist2h2ac, be | histone cluster 2, H2ac, H2be |
| Hist2h3c, 3c2, h4 | histone cluster 2, H3c, H3c2, H4 |
| Hist3h3, 4h4 | similar to histone cluster 1 H2ai, cluster 4H4 |
| Hk2 | hexokinase 2 |
| Hmga1, b3 | high mobility group AT-hook 1, box 3 |
| Hmgcr | 3-hydroxy-3-methylglutaryl-CoA reductase |
| Hmgcs1 | 3-hydroxy-3-methylglutaryl-CoA synthase 1 (soluble) |
| Hmx1 | H6 family homeobox 1 |
| hnRNP | heterogeneous nuclear ribonucleoprotein |
| Homer2 | homer homolog 2 (Drosophila) |
| Hopx | HOP homeobox |
| Hp | haptoglobin |
| Hpn | hepsin |
| Hps4 | Hermansky-Pudlak syndrome 4 homolog (human) |
| Hrasls | HRAS-like suppressor |
| Hs6st1 | heparan sulfate 6-O-sulfotransferase 1 |
| Hsbp1 | heat shock factor binding protein 1 |
| Hsd17b8 | hydroxysteroid (17-beta) dehydrogenase 8 |
| Hsd12 | hydroxysteroid dehydrogenase like 2 |
| Hsp70 | heat shock protein70 |
| Hspa1b, 5, 8, 9 | heat shock 70kD protein 1B, 5, 8, 9 |
| Htatip2 | HIV-1 tat interactive protein 2, homolog (human) |
| Hyal2 | hyaluronoglucosaminidase 2 |
| Hyou1 | hypoxia up-regulated 1 |
| Iars | isoleucyl-tRNA synthetase |
| Icam1, 5 | intercellular adhesion molecule 1, 5 |
| Id1, 2, 4 | inhibitor of DNA binding 1, 2, 4 |
| Idi1 | isopentenyl-diphosphate delta isomerase 1 |
| Iids | iduronate 2-sulfatase |
| Ier2, 3, 5, 5l | immediate early response 2, 3, 5, 5-like |
| Ilf2/2b | interferon, alpha-inducible protein 27 like 2B |
| Ilf35 | interferon-induced protein 35 |
| Ilf2, 3 | interferon-induced protein with tetratricopeptide repeats 2, 3 |
| Ilfm1 | interferon induced transmembrane protein 1 |
| Ilfng | Interferon gamma |
| Ilfngr2 | interferon gamma receptor 2 |
| Ifrd1 | interferon-related developmental regulator 1 |
| Ift88 | intraflagellar transport 88 homolog (Chlamydomonas) |
| Igf1r, 2r | insulin-like growth factor 1, 2 receptor |
| Igf2bp2 | insulin-like growth factor 2 mRNA binding protein 2 |
| Igfbp6 | insulin-like growth factor binding protein 6 |
| Il11ra1, 13ra2 | interleukin 11 receptor alpha chain 1, 13 receptor alpha 2 |
| Il13, 16, 23a, 34 | Interleukin 13, 16, 23 alpha subunit p19, 34 |
| Il1a, 1b, f10, 2, 4, 6, 10 | Interleukin 1 alpha, 1 beta, 1 family member 10, 2, 4, 6, 10 |
| Il1r2, r1, r6 | interleukin 1 receptor, type II, receptor-like 1, 6 receptor |
| Il1rn | interleukin 1 receptor antagonist |
| Ilf3 | interleukin enhancer binding factor 3 |
| Incenp | inner centromere protein |
| Inip | similar to HSPC043 protein |
| Insig1 | insulin induced gene 1 |
| Insr | insulin receptor |
| Ipk6k1 | inositol hexakisphosphate kinase 1 |
| Ipo5 | importin 5 |
| Iqgap1 | IQ motif containing GTPase activating protein 1 |
| Irak3 | interleukin-1 receptor-associated kinase 3 |
| Irf7 | interferon regulatory factor 7 |
| Irs1 | insulin receptor substrate 1 |
| Irx2 | iroquois homeobox 2 |
| Isg15 | ISG15 ubiquitin-like modifier |
| Isg20 | interferon stimulated exonuclease gene 20 |
| Isx | similar to Retinal homeobox protein Rx (DRx1) (DRx) |
| Isy1 | ISY1 splicing factor homolog |
| Isyna1 | inositol-3-phosphate synthase 1 |

Table S10 continued

| Symbol | Full name |
|-------------------------|--|
| Itga1, 10, 8 | integrin, alpha 1, 10, 8 |
| Itgb1, 5, b1 | integrin, beta 1, 5, beta-like 1 |
| Itn2b, 2c | integral membrane protein 2B, 2C |
| Itpkc | inositol-trisphosphate 3-kinase C |
| Izumo4 | IZUMO family member 4 |
| Jade1 | PHD finger protein 17 |
| Jag1 | jagged 1 |
| Jnk | mitogen-activated protein kinase 8 (Mapk8) |
| Jpt1 | Jupiter microtubule associated homolog 1 |
| Jsrp1 | junctional sarcoplasmic reticulum protein 1 |
| Junb | jun B proto-oncogene |
| Jup | junction plakoglobin |
| Kazald1 | Kazal-type serine peptidase inhibitor domain 1 |
| Kcmf1 | potassium channel modulatory factor 1 |
| Kcne2, k2 | potassium voltage-gated channel, Isk-related family member 2, subfamily K member 2 |
| Kcp | kielin/chordin-like protein |
| Kctd13 | potassium channel tetramerisation domain containing 13 |
| Kdelc2, r3 | KDEL (Lys-Asp-Glu-Leu) containing 2, endoplasmic reticulum protein retention receptor 3 |
| Kdm6b | lysine (K)-specific demethylase 6B |
| Keap1 | kelch like ECH associated protein 1 |
| Kif11, 18a, 20a, 22, 23 | kinesin family member 11, 18a, 20a, 22, 23 |
| Kifc1, c2, c3 | kinesin family member C1, C2, C3 |
| Kit | KIT proto-oncogene receptor tyrosine kinase |
| Kitlg | KIT ligand |
| Klc1 | kinesin light chain 1 |
| Klf10, 2, 4, 9 | Kruppel-like factor 10, 2 (lung), 4 (gut), 9 |
| Klhl21, 36 | kelch-like 21, 36 |
| Kntc1 | kinetochore associated 1 |
| Kpna1, a2 | karyopherin alpha 1, alpha 2 |
| Kprp | keratinocyte proline-rich protein |
| Kras | Kras proto-oncogene GTPase |
| Krtap16-5, 21-2 | keratin associated protein 16-5, 21-2 |
| Lamc2 | laminin, gamma 2 |
| Laptm4a, 4b | lysosomal protein transmembrane 4 alpha, 4 beta |
| Lars | leucyl-tRNA synthetase |
| Lbh | limb bud and heart development |
| Lbp | lipopolysaccharide binding protein |
| Lc17 | myosin, light polypeptide 6, alkali, smooth muscle and non-muscle-like |
| Lcat | lecithin cholesterol acyltransferase |
| Lck | LCK proto-oncogene, Src family tyrosine kinase |
| Lcn2 | lipocalin 2 |
| Ldlr | low density lipoprotein receptor |
| Lep | Leptin |
| Leprel4 | leprecan-like 4 |
| Letm1 | leucine zipper-EF-hand containing transmembrane protein 1 |
| Lgals1, 5, 9 | lectin, galactoside-binding, soluble, 1, 5, 9 |
| Lgmn | legumain |
| Lhfp12 | lipoma HMGIC fusion partner-like 2 |
| Lims2 | LIM and senescent cell antigen like domains 2 |
| Lmbrd1 | LMBR1 domain containing 1 |
| Lnp | limb and neural patterns |
| Lnx1 | ligand of numb-protein X 1 |
| LOC100125364 | hypothetical protein LOC100125364 |
| LOC100359930 | Cyp2s1 protein-like |
| LOC100360880 | FBJ osteosarcoma oncogene B |
| LOC100361571 | keratin associated protein 1-3-like |
| LOC103691261 | similar to Sperm flagellar protein 1 |
| LOC257650 | hippyragranin |
| LOC301748 | similar to RIKEN cDNA 1700001E04 |
| LOC360713 | similar to pleckstrin homology-like domain, family B, member 2 |
| LOC361914 | similar to solute carrier family 7 (cationic amino acid transporter, y+ system), member 12 |
| LOC498154 | hypothetical protein LOC498154 |
| LOC498675 | hypothetical LOC498675 |
| LOC499219 | hypothetical protein LOC499219 |
| LOC499843 | LRRGT00091 |
| LOC500028 | hypothetical protein LOC500028 |
| LOC500035 | hypothetical protein LOC500035 |
| LOC500227 | hypothetical gene supported by BC079424 |
| LOC500846 | hypothetical protein LOC500846 |
| LOC500959 | triosephosphate isomerase |
| LOC678708 | similar to histone 1, H2ai |
| LOC680322 | similar to Histone H2A type 1 |
| LOC680578 | similar to C56C10.7a |
| LOC681382 | hypothetical protein LOC681382 |
| LOC684998 | hypothetical protein LOC684998 |

Table S10 continued

| Symbol | Full name |
|-------------------------|---|
| LOC688459 | hypothetical protein LOC688459 |
| LOC689065 | hypothetical protein LOC689065 |
| LOC689412 | similar to CG4025-PA |
| LOC689574 | hypothetical protein LOC689574 |
| LOC689959 | hypothetical protein LOC689959 |
| LOC690386 | hypothetical protein LOC690386 |
| LOC690415 | hypothetical protein LOC690415 |
| Lonp1 | lon peptidase 1, mitochondrial |
| Lox | lysyl oxidase |
| Loxl1, 2 | lysyl oxidase-like 1, 2 |
| Lpar1, 6 | lysophosphatidic acid receptor 1, 6 |
| Lrif1 | ligand dependent nuclear receptor interacting factor 1 |
| Lrp11 | low density lipoprotein receptor-related protein 11 |
| Lrrc8b | leucine rich repeat containing 8 family, member B |
| Lsm14a | LSM14A, SCD6 homolog A |
| Ltbp3 | latent transforming growth factor beta binding protein 3 |
| Luc7l | LUC7-like |
| Lum | lumican |
| Lurap1l | leucine rich adaptor protein 1-like |
| Lvrn | laeverin |
| Ly6g5c | lymphocyte antigen 6 complex, locus G5C |
| Lypla2 | lysophospholipase 2 |
| Lyrm9 | LYR motif containing 9 |
| Lysmd2 | LysM, putative peptidoglycan-binding, domain containing 2 |
| Lztf1l | leucine zipper transcription factor-like 1 |
| Mafk | v-maf musculoaponeurotic fibrosarcoma oncogene homolog K |
| Mag | myelin-associated glycoprotein |
| Maged2 | melanoma antigen, family D, 2 |
| Manba | mannosidase, beta A, lysosomal |
| Map2k1, 3k6 | mitogen activated protein kinase 1, 6 |
| Map6, 7 | microtubule-associated protein 6, 7 |
| Mapk1, 9, 14 | mitogen-activated protein kinase-1, 9, 14 (p38) |
| Mapkapk3 | mitogen-activated protein kinase-activated protein kinase 3 |
| Mapre2 | microtubule-associated protein, RP/EB family, member 2 |
| March2 | membrane-associated ring finger (C3HC4) 2 |
| Marcks1l | MARCKS-like 1 |
| Mars | methionine-tRNA synthetase |
| Mat2b | methionine adenosyltransferase II, beta |
| Mbtps1 | membrane-bound transcription factor peptidase, site 1 |
| Mccrip2 | family with sequence similarity 195, member A |
| Mcl1 | myeloid cell leukemia sequence 1 |
| Mcm3, 4, 5, 6 | minichromosome maintenance complex component 3,4, 5, 6 |
| Mcoln1 | mucolipin 1 |
| Mcub | coiled-coil domain containing 109B |
| Mdm2 | Mdm2 p53 binding protein homolog (mouse) |
| MDR1a | ATP-binding cassette, sub-family B (MDR/TAP), member 1A |
| Me1 | malic enzyme 1, NADP(+)-dependent, cytosolic |
| Mecp2 | methyl CpG binding protein 2 |
| Med11, 18, 23 | mediator complex subunit 11, 18, 23 |
| Medag | mesenteric estrogen-dependent adipogenesis |
| Medag | mesenteric estrogen-dependent adipogenesis |
| Mef2b | myocyte enhancer factor 2B |
| Melk | maternal embryonic leucine zipper kinase |
| Meox2 | mesenchyme homeobox 2 |
| Mesdc2 | mesoderm development candidate 2 |
| Met | MET proto-oncogene, receptor tyrosine kinase |
| Metrn1 | meteorin, glial cell differentiation regulator-like |
| Mettl11a, 22, 23, 3, 7b | methyltransferase like 11A, 22, 23, 3, 7b |
| Mex3b | mex3 homolog B (C. elegans) |
| Mfge8 | milk fat globe-EGF factor 8 |
| Mgarp | mitochondria-localized glutamic acid-rich protein |
| Mgat1 | mannosyl (alpha-1,3-)-glycoprotein beta-1,2-N-acetylglucosaminyltransferase |
| MGC105649 | hypothetical LOC302884 |
| Mgea5 | meningioma expressed antigen 5 (hyaluronidase) |
| Mgst3 | microsomal glutathione S-transferase 3 |
| Micos13 | mitochondrial contact site and cristae organizing system subunit 13 |
| Micu1 | mitochondrial calcium uptake 1 |
| Mid1ip1 | MID1 interacting protein 1 (gastrulation specific G12 homolog (zebrafish)) |
| Mif4gd | MIF4G domain containing |
| Mis18a | MIS18 kinetochore protein homolog A (S. pombe) |
| Mif1ip | myeloid leukemia factor 1 interacting protein |
| Mmaa | methylmalonic aciduria (cobalamin deficiency) cblA type |
| Mme | membrane metallo-endopeptidase |
| Mmp11, 15, 2, 28, 8, 9 | matrix metallopeptidase 11, 15, 2, 28, 8 (neutrophil collagenase), 9 |
| Mms22l | MMS22-like, DNA repair protein |

Table S10 continued

| Symbol | Full name |
|---------------------|--|
| Mnt | max binding protein |
| Mogat2 | monoacylglycerol O-acyltransferase 2 |
| Mok | MOK protein kinase |
| Mon1b | MON1 homolog b (yeast) |
| Morf4l2 | mortality factor 4 like 2 |
| Mospd1 | motile sperm domain containing 1 |
| Mphosph6 | M phase phosphoprotein 6 |
| Mpp5 | membrane protein, palmitoylated 5 (MAGUK p55 subfamily member 5) |
| Mpv17l2 | MPV17 mitochondrial membrane protein-like 2 |
| Mras | muscle RAS oncogene homolog |
| Mrc2 | mannose receptor, C type 2 |
| Mrgprf | MAS-related GPR, member F |
| Mri1 | methylthioribose-1-phosphate isomerase homolog (S. cerevisiae) |
| Mrnip | MRN complex interacting protein |
| Mrpl11, 17, 38, 55 | mitochondrial ribosomal protein L11, 17, 38, 55 |
| Mrps12, 17, 18b, 21 | mitochondrial ribosomal protein S12, 17, 18b, 21 |
| Mrps21l | mitochondrial ribosomal protein S21-like |
| Mrv1 | murine retrovirus integration site 1 homolog |
| Ms4a7 | membrane-spanning 4-domains, subfamily A, member 7 |
| Mst1r | macrophage stimulating 1 receptor |
| Mt1a | metallothionein 1a |
| Mtbp | MDM2 binding protein |
| Mtch2 | mitochondrial carrier 2 |
| Mthfd1, 2 | methylenetetrahydrofolate dehydrogenase 1, 2 |
| Mtpap | mitochondrial poly(A) polymerase |
| Mus81 | MUS81 endonuclease homolog |
| Mvd | mevalonate (diphospho) decarboxylase |
| Mx1 | myxovirus (influenza virus) resistance 1 |
| Mxd1, 4 | max dimerization protein 1, 4 |
| Mybl2 | myeloblastosis oncogene-like 2 |
| Myc | myelocytomatosis oncogene |
| Mydgf | myeloid-derived growth factor |
| Myh1, 8 | myosin, heavy polypeptide 1 (skeletal muscle, adult), 8 (skeletal muscle, perinatal) |
| Myhc | myosin, heavy polypeptide 1, skeletal muscle, adult |
| Myl6 | myosin, light chain 6, alkali, smooth muscle and non-muscle |
| Mylk | myosin light chain kinase |
| Mylk3 | myosin light chain kinase 3 |
| Myo1f, 5a | myosin IF, VA |
| Mzf1 | myeloid zinc finger 1 |
| N4bp2l1 | NEDD4 binding protein 2-like 1 |
| Naglu | N-acetyl-alpha-glucosaminidase |
| Nampt | nicotinamide phosphoribosyltransferase |
| Napsa | napsin A aspartic peptidase |
| Narf | nuclear prelamin A recognition factor |
| Nars | asparaginyl-tRNA synthetase |
| Nat14 | N-acetyltransferase 14 |
| Nbr1 | neighbor of Brca1 gene 1 |
| Ncaph | non-SMC condensin I complex, subunit H |
| Nck2 | NCK adaptor protein 2 |
| Nckipsd | NCK interacting protein with SH3 domain |
| Ndc80 | NDC80 homolog, kinetochore complex component |
| Nde1 | nudE nuclear distribution gene E homolog 1 |
| Ndrp2, 4 | N-myc downstream regulated gene 2, 4 |
| Ndufa4 | NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 4 |
| Ndufaf6 | NADH:ubiquinone oxidoreductase complex assembly factor 6 |
| Nedd4 | neural precursor cell expressed, developmentally down-regulated 4 |
| Nek6 | NIMA (never in mitosis gene a)-related kinase 6 |
| Nelf | nasal embryonic LHRH factor |
| Nes | nestin |
| Neu1 | sialidase 1 (lysosomal sialidase) |
| Nfat5 | nuclear factor of activated T-cells 5 |
| Nfe2l1, l2 | nuclear factor, erythroid derived 2, -like 1, like 2 |
| Nfil3 | nuclear factor, interleukin 3 regulated |
| Nfkb1 | nuclear factor kappa B subunit 1 |
| Nfkbiz | nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, zeta |
| Nfu1 | NFU1 iron-sulfur cluster scaffold homolog (S. cerevisiae) |
| Nfyb | nuclear transcription factor-Y beta |
| Ngdn | neuroguidin, EIF4E binding protein |
| NGF | nerve growth factor |
| Nid2 | nidogen 2 |
| Ninj1 | ninjurin 1 |
| Nkain1 | Na+/K+ transporting ATPase interacting 1 |
| Nkx6-3 | NK6 homeobox 3 |
| Nmnat3 | nicotinamide nucleotide adenyltransferase 3 |
| Nmrk1 | similar to Nicotinamide riboside kinase 1 |

Table S10 continued

| Symbol | Full name |
|-------------------------|---|
| Nnat | neuronatin |
| Nol8, 14, 58 | nucleolar protein 8, 14, 58 |
| Nox1, 4 | NADPH oxidase 1, 4 |
| Npap60 | nuclear pore associated protein |
| Npas2 | neuronal PAS domain protein 2 |
| Npc1 | Cdig2 protein |
| Npepl1 | aminopeptidase-like 1 |
| Nphp1 | nephronophthisis 1 (juvenile) homolog (human) |
| Nr1d1, 2f1, 2f2, | nuclear receptor subfamily 1, group D, member 1, 2, group F, member 1, 2, group F, member 2 |
| Nr4a1, 2, 3 | nuclear receptor subfamily 4, group A, member 1, 2, 3 |
| Nras | NRAS proto-oncogene, GTPase |
| Nrf1, 2 | nuclear respiratory factor 1, 2 |
| Nrg1 | neuregulin 1 |
| Nrm | nurim (nuclear envelope membrane protein) |
| Ns5atp9 | NS5A (hepatitis C virus) transactivated protein 9 |
| Nsd1, 2 | nuclear receptor binding SET domain protein 1, Wolf-Hirschhorn syndrome candidate 1 |
| Nsun4 | NOP2/Sun domain family, member 4 |
| Ntrk1, 2 | neurotrophic receptor tyrosine kinase 1, 2 |
| Nudt1, 12, 14, 15, 6, 9 | nudix (nucleoside diphosphate linked moiety X)-type motif 1, 12, 14, 15, 6, 9 |
| Nuf2 | NUF2, NDC80 kinetochore complex component, homolog |
| Nup54 | nucleoporin 54 |
| Nusap1 | nucleolar and spindle associated protein 1 |
| Nxn | nucleoredoxin |
| Nxph3 | neurexophilin 3 |
| Oas1e, l2 | 2'-5' oligoadenylate synthetase 1E, like 2 |
| Oat | ornithine aminotransferase |
| Oaz2 | ornithine decarboxylase antizyme 2 |
| Obfc1 | oligonucleotide/oligosaccharide-binding fold containing 1 |
| Oct4/Pou5f1 | Pou class 5 homeobox 1 |
| Odc1 | ornithine decarboxylase 1 |
| Ogn | osteoglycin |
| Ogt | O-linked N-acetylglucosamine (GlcNAc) transferase |
| Olfml1, 2a, 3 | olfactomedin-like 1, 2a, 3 |
| Omd | osteomodulin |
| Optn | optineurin |
| Oser1 | oxidative stress responsive gene |
| Osr2 | odd-skipped related 2 (Drosophila) |
| Otub2 | OTU domain, ubiquitin aldehyde binding 2 |
| Otx1 | orthodenticle homeobox 1 |
| Ovol1 | ovo-like 1(Drosophila) |
| P2ry2 | purinergic receptor P2Y, G-protein coupled, 2 |
| P3h1 | prolyl 3-hydroxylase 1 |
| Pak1ip1 | PAK1 interacting protein 1 |
| Paox | polyamine oxidase (exo-N4-amino) |
| Papola | poly (A) polymerase alpha |
| Pappa1 | pregnancy-associated plasma protein A |
| Papss2 | 3'-phosphoadenosine 5'-phosphosulfate synthase 2 |
| Parp1, 14 | poly (ADP-ribose) polymerase family, member 1, 14 |
| Parvb | parvin, beta |
| Patz1 | POZ (BTB) and AT hook containing zinc finger 1 |
| Pawr | PRKC, apoptosis, WT1, regulator |
| Pbk | PDZ binding kinase |
| Pcdh19, ac2, b19 | protocadherin 19, alpha subfamily C 2, beta 19 |
| Pcdhga7, gc5 | protocadherin gamma subfamily A7, C5 |
| Pck2 | phosphoenolpyruvate carboxykinase 2 (mitochondrial) |
| Pcolce | procollagen C-endopeptidase enhancer |
| Pcp4l1 | Purkinje cell protein 4-like 1 |
| Pcsk4 | proprotein convertase subtilisin/kexin type 4 |
| Pdcd10, 6 | programmed cell death 10, 6 |
| Pdgfa | Platelet derived growth factor subunit A |
| Pdgfra | platelet derived growth factor receptor, alpha polypeptide |
| Pdgfrl | platelet-derived growth factor receptor-like |
| Pdk1, 2 | pyruvate dehydrogenase kinase, isozyme 1, 2 |
| Pdlim5 | PDZ and LIM domain 5 |
| Pdp1 | pyruvate dehydrogenase phosphatase catalytic subunit 1 |
| Pdrg1 | p53 and DNA damage regulated 1 |
| Pdx1 | pancreatic and duodenal homeobox 1 |
| Pdpx | pyridoxal (pyridoxine, vitamin B6) phosphatase |
| Pex13 | peroxisomal biogenesis factor 13 |
| Pfkm, p | phosphofructokinase muscle, platelet |
| Pgpep1 | pyroglutamyl-peptidase I |
| Phf19 | PHD finger protein 19 |
| Phgdh | phosphoglycerate dehydrogenase |
| Phlda1 | pleckstrin homology-like domain, family A, member 1 |
| Pigp | phosphatidylinositol glycan anchor biosynthesis, class P |

Table S10 continued

| Symbol | Full name |
|----------------------|--|
| Pik3r1 | phosphoinositide-3-kinase, regulatory subunit 1 alpha (PI3K-p85) |
| Pim1, 3 | pim-1 oncogene, 3 |
| Pimreg | PICALM interacting mitotic regulator |
| Pip4p1 | phosphatidylinositol-4,5-bisphosphate 4-phosphatase 1 |
| Pip5k1c | phosphatidylinositol-4-phosphate 5-kinase, type I, gamma |
| Pitx1 | paired-like homeodomain 1 |
| Pkca | protein kinase C alpha |
| Pknx1 | PBX/knotted 1 homeobox 1 |
| Pkp1, 2 | plakophilin 1, 2 |
| Pla2g16, 2a, 2c | phospholipase A2, group XVI, group IIA (platelets, synovial fluid), group IIC |
| Plekha4, g5 | pleckstrin homology domain containing, fam.A (phosphoinositide bind.) 4, fam.G (with RhoGef dom.) 5 |
| Plk1, 2, 3, 4 | polo-like kinase 1, 2, 3, 4 |
| Pls3 | plastin 3 |
| Plscr2 | phospholipid scramblase 2 |
| Pnn | pinin, desmosome associated protein |
| Pnpla2 | patatin-like phospholipase domain containing 2 |
| Pnrc1, 2 | proline-rich nuclear receptor coactivator 1, 2 |
| Podnl1 | podocan-like 1 |
| Podxl2 | podocalyxin-like 2 |
| Pofut2 | protein O-fucosyltransferase 2 |
| Pold1, g2, m | polymerase (DNA directed), delta 1 catalytic subunit, gamma 2, accessory subunit, mu |
| Polr1a, 3gl | polymerase (RNA) I polypeptide A, III (DNA directed) polypeptide G-like |
| Pomgnt2 | protein O-linked mannose N-acetylglucosaminyltransferase 2 (beta 1,4-) |
| Pon2 | paraoxonase 2 |
| Postn | periostin, osteoblast specific factor |
| Ppa2 | pyrophosphatase (inorganic) 2 |
| Ppap2b | phosphatidic acid phosphatase type 2B |
| Ppat | phosphoribosyl pyrophosphate amidotransferase |
| Ppih | peptidylprolyl isomerase H (cyclophilin H) |
| Ppp1cb | protein phosphatase 1, catalytic subunit, beta isozyme |
| Ppp1r14a, 15a, 2,,32 | protein phosphatase 1, regul. (inhib.) sub.14A, regul. sub.15A, regul. (inhib.) sub.2, regul. sub.32 |
| Ppp2r3b | protein phosphatase 2, regulatory subunit B", beta |
| Ppt1 | palmitoyl-protein thioesterase 1 |
| Prag1 | pragma of Rnd2 |
| Prdx4, 5 | peroxiredoxin 4, 5 |
| Prelp | proline/arginine-rich end leucine-rich repeat protein |
| Prepl | prolyl endopeptidase-like |
| Prkacb | protein kinase, cAMP dependent, catalytic, beta |
| Prkcd | protein kinase C delta |
| Prl | Prolactin |
| Prmt1, 5, 7 | protein arginine methyltransferase 1, 5, 7 |
| Proser2 | proline and serine rich 2 |
| Prpf40b, 4b | pre-mRNA processing factor 40 homolog B, 4 homolog B |
| Prr7, c2c | proline rich 7 (synaptic), coiled-coil 2C |
| Prss23 | protease, serine, 23 |
| PS | phosphatidylserine |
| Psap | prosaposin |
| Psat1 | phosphoserine aminotransferase 1 |
| Psd | pleckstrin and Sec7 domain containing |
| Psen2 | presenilin 2 |
| Psip1 | PC4 and SFRS1 interacting protein 1 |
| Psmb10, e4 | proteasome (prosome, macropain) subunit, beta type 10, activator subunit 4 |
| Psph | phosphoserine phosphatase |
| Ptcd2 | pentatricopeptide repeat domain 2 |
| Pten | phosphatase and tensin homolog |
| Ptges2, is | prostaglandin E synthase 2, I2 (prostacyclin) synthase |
| Pth2 | parathyroid hormone 2 |
| Ptms | parathyromosin |
| Ptn | pleiotrophin |
| Ptp4a1 | protein tyrosine phosphatase type IVA, member 1 |
| Ptpdc1 | protein tyrosine phosphatase domain containing 1 |
| Ptpn12, 2 | protein tyrosine phosphatase, non-receptor type 12, 2 |
| Ptprf, m, s | protein tyrosine phosphatase, receptor type, F, M, S |
| Ptrhd1 | peptidyl-tRNA hydrolase domain containing 1 |
| Pttg1 | pituitary tumor-transforming 1 |
| Ptx3 | pentraxin 3, long |
| Purb | purine rich element binding protein B |
| Pvr | PVR cell adhesion molecule (poliovirus receptor) |
| Pxn | paxillin |
| Pyroxd2 | pyridine nucleotide-disulphide oxidoreductase domain 2 |
| Qsox2 | quiescin Q6 sulfhydryl oxidase 2 |
| R3hdm1 | R3H domain containing 1 |
| Rab11fip5 | similar to RAB11 family interacting protein 5 (class I) isoform 1 |
| Rab26, 32 | RAB26, 32, member RAS oncogene family |
| Rab3il1 | RAB3A interacting protein (rabin3)-like 1 |

Table S10 continued

| Symbol | Full name |
|---------------------|---|
| Rabggtb | Rab geranylgeranyltransferase, beta subunit |
| Rad23a, 52, 54l, 9b | RAD23 homolog A, RAD52 homolog, 54 like, 9 homolog B |
| Rae1 | RAE1 RNA export 1 homolog |
| Rage/Ager | advanced glycosylation end-product specific receptor |
| Rai12, 14 | retinoic acid induced 12, 14 |
| Rala | v-ral simian leukemia viral oncogene homolog A (ras related) |
| Ramp3 | receptor (G protein-coupled) activity modifying protein 3 |
| Rangrf | RAN guanine nucleotide release factor |
| Rap1a | RAP1A, member of RAS oncogene family |
| Rara | retinoic acid receptor, alpha |
| Rars2 | arginyl-tRNA synthetase 2, mitochondrial |
| Rasl11b, 12 | RAS-like family 11 member B, family 12 |
| Rassf2, 5 | Ras association (RalGDS/AF-6) domain family member 2, 5 |
| Rb1 | retinoblastoma 1 |
| Rb1cc1 | RB1-inducible coiled-coil 1 |
| Rbfox1 | RNA binding protein, fox-1 homolog 1 |
| Rbm12, 28, 3, 38, x | RNA binding motif protein 12, 28, 3 (RNP1, RRM), 38, X-linked |
| Rbp1, 2 | retinol binding protein 1 (cellular), 2 (cellular) |
| Rc3h2 | ring finger and CCCH-type domains 2 |
| Rcc2 | regulator of chromosome condensation 2 |
| Rcn3 | reticulocalbin 3, EF-hand calcium binding domain |
| Rcor1 | REST corepressor 1 |
| Reck | reversion-inducing-cysteine-rich protein with kazal motifs |
| Rel2 | RELT-like 2 |
| Renbp | renin binding protein |
| Ret | ret proto-oncogene |
| Rfc3 | replication factor C (activator 1) 3 |
| Rftn1 | raftlin lipid raft linker 1 |
| RGD1304587 | similar to RIKEN cDNA 2310033P09 |
| RGD1304624 | similar to RIKEN cDNA 2700097O09 |
| RGD1305938 | similar to expressed sequence AW549877 |
| RGD1306227 | similar to 4833420G17Rik protein |
| RGD1307929 | similar to CG14967-PA |
| RGD1308117 | similar to 9930012K11Rik protein |
| RGD1309104 | similar to RIKEN cDNA 1700025G04 gene |
| RGD1309534 | similar to RIKEN cDNA 4931406C07 |
| RGD1311739 | similar to RIKEN cDNA 1700037H04 |
| RGD1311946 | similar to RIKEN cDNA 1810055G02 |
| RGD1560073 | similar to ribosomal protein S10 |
| RGD1560617 | hypothetical gene supported by NM_053561; AF062594 |
| RGD1561381 | similar to microsomal glutathione S-transferase 3 |
| RGD1561671 | similar to RIKEN cDNA 2900010M23 |
| RGD1562114 | RGD1562114 |
| RGD1562136 | similar to D1Ert622e protein |
| RGD1562378 | histone H4 variant H4-v.1 |
| RGD1563034 | similar to ETS domain transcription factor ERF (Ets2 repressor factor) |
| RGD1563378 | similar to ferritin heavy polypeptide-like 17 |
| RGD1564664 | similar to LOC387763 protein |
| RGD1564712 | RGD1564712 |
| RGD1565033 | similar to hypothetical protein LOC284018 isoform b |
| RGD1565170 | similar to 60S ribosomal protein L23a |
| RGD1566265 | similar to RIKEN cDNA 2610002M06 |
| Rgma | RGM domain family, member A |
| Rgs2, 3 | regulator of G-protein signaling 2, 3 |
| Rhbdf2 | rhomboid 5 homolog 2 |
| Rhob | ras homolog gene family, member B |
| Riok3 | RIO kinase 3 |
| Ripk3 | receptor-interacting serine-threonine kinase 3 |
| Rmrp | RNA component of mitochondrial RNA processing endoribonuclease |
| Rnase4 | ribonuclease, RNase A family 4 |
| Rnf141, 34 | ring finger protein 141, 34 |
| Rnpepl1 | arginyl aminopeptidase (aminopeptidase B)-like 1 |
| Romo1 | reactive oxygen species modulator 1 |
| Rp4 | RGD1559532 |
| Rpa3 | replication protein A3 |
| Rpe | ribulose-5-phosphate-3-epimerase |
| Rpf2 | ribosome production factor 2 homolog |
| Rpl10l | ribosomal protein L10-like |
| Rragd | Ras-related GTP binding D |
| Rrm2 | ribonucleotide reductase M2 |
| Rrp12 | ribosomal RNA processing 12 homolog |
| Rrp9 | ribosomal RNA processing 9, small subunit (SSU) processome component, homolog (yeast) |
| Rsad1, 2 | similar to radical S-adenosyl methionine domain containing 1, 2 |
| Rsl24d1 | ribosomal L24 domain containing 1 |
| Rspo1 | R-spondin 1 |

Table S10 continued

| Symbol | Full name |
|----------------------|--|
| Rsrp1 | similar to chromosome 1 open reading frame 63 |
| Rsu1 | Ras suppressor protein 1 |
| Rtkn | rhotekin |
| Rtl8b | retrotransposon Gag like 8B |
| Rtp4 | receptor (chemosensory) transporter protein 4 |
| Runx1 | runt-related transcription factor 1 |
| Rwdd1 | RWD domain containing 1 |
| S100a1, 10, 13,4 | S100 calcium binding protein A1, A10, A13, A4 |
| Sacm11 | SAC1 suppressor of actin mutations 1-like |
| Samd4a | sterile alpha motif domain containing 4A |
| Sap25 | Sin3A-associated protein 25 |
| Sapcd2 | suppressor APC domain containing 2 |
| Sars | seryl-tRNA synthetase |
| Scaf4 | SR-related CTD-associated factor 4 |
| Scara3, 5 | scavenger receptor class A, member 3, 5 |
| Scarf2 | scavenger receptor class F, member 2 |
| Scd1 | stearyl-Coenzyme A desaturase 1 |
| Scfd2 | sec1 family domain containing 2 |
| Scp2 | sterol carrier protein 2 |
| Sdad1 | SDA1 domain containing 1 |
| Sdcbp2 | syndecan binding protein (syntenin) 2 |
| Sdf2, 2l1 | stromal cell derived factor 2, 2-like 1 |
| Sdr39u1 | short chain dehydrogenase/reductase family 39U, member 1 |
| Selenom, w | selenoprotein M, W 1 |
| Sema3b | sema domain, immunoglobulin domain, short basic domain, secreted, (semaphorin) 3B |
| Sema5a | sema d., seven thrombospondin repeats (type 1 & 1-like), transm.d., short cytopl.d., (semaphorin) 5A |
| Sema6c | sema domain, transmembrane domain, cytoplasmic domain, (semaphorin) 6C |
| Senp8 | SUMO/sentrin specific peptidase family member 8 |
| Sepp1 | selenoprotein P, plasma, 1 |
| Sept4, 7 | septin 4, 7 |
| Serac1 | serine active site containing 1 |
| Serp1 | stress-associated endoplasmic reticulum protein 1 |
| Serpib1a, 7, e1, f1 | serpin peptidase inhibitor family B member 1A, member 7, E member 1, F member 1 |
| Sertad3, 4 | SERTA domain containing 3, 4 |
| Sesn2, 3 | sestrin 2, 3 |
| Set | SET nuclear oncogene |
| Sfrp2 | secreted frizzled-related protein 2 |
| Sfxn1, 4 | sideroflexin 1, 4 |
| Sgcb | sarcoglycan, beta (dystrophin-associated glycoprotein) |
| Sgk1 | serum/glucocorticoid regulated kinase 1 |
| Sgk196 | protein kinase-like protein SgK196 |
| Sgpp1 | sphingosine-1-phosphatase |
| Sh3bp2 | SH3-domain binding protein 2 |
| Shbg | sex hormone binding globulin |
| Shc2 | SHC (Src homology 2 domain containing) transforming protein 2 |
| Shcbp1 | SHC binding and spindle associated 1 |
| Shisa4, 5, 8 | shisa homolog 4, 5, 8 |
| Shmt1, 2 | serine hydroxymethyltransferase 1 (soluble), 2 (mitochondrial) |
| Sik1 | salt-inducible kinase 1 |
| Sin3a | SIN3 homolog A, transcription regulator (yeast) |
| Sipa1 | signal-induced proliferation-associated 1 |
| Sirpa | signal-regulatory protein alpha |
| Sirt3 | sirtuin 3 |
| Six3 | SIX homeobox 3 |
| Ska1 | spindle and kinetochore associated complex subunit 1 |
| Skil | SKI-like oncogene |
| Skp1 | S-phase kinase-associated protein 1 |
| Slc12a2 | solute carrier family 12 member 2 (sodium/potassium/chloride transporters) |
| Slc16a1, a3 | solute carrier family 16, member 1, 3 (monocarboxylic acid transporter 1, 4) |
| Slc17a5 | solute carrier family 17 (anion/sugar transporter), member 5 |
| Slc19a1 | solute carrier family 19 (folate transporter), member 1 |
| Slc1a5 | solute carrier family 1 (neutral amino acid transporter), member 5 |
| Slc20a1, a2 | solute carrier family 20 (phosphate transporter), member 1, 2 |
| Slc22a17 | solute carrier family 22, member 17 |
| Slc25a12, 25 | solute carrier family 25 (mitochondrial carrier), member 12, 25 (phosphate) |
| Slc25a28,30,33,37,38 | solute carrier family 25, member 28, 30, 33, 37, 38 |
| Slc2a1 | solute carrier family 2 (facilitated glucose transporter), member 1 |
| Slc30a4 | solute carrier family 30 (zinc transporter), member 4 |
| Slc33a1 | solute carrier family 33 (acetyl-CoA transporter), member 1 |
| Slc35a2, f5 | solute carrier family 35 (UDP-galactose transporter) member A2, member F5 |
| Slc38a7 | solute carrier family 38, member 7 |
| Slc3a2 | solute carrier family 3 (activators of dibasic and neutral amino acid transport), member 2 |
| Slc44a1 | solute carrier family 44, member 1 |
| Slc4a2 | solute carrier family 4 (anion exchanger), member 2 |
| Slc6a4, 6, 9 | solute carrier family 6 (neurotransmitter transporter), member 4 (serotonin), 6 (taurine), 9 (glycine) |

Table S10 continued

| Symbol | Full name |
|-----------------|---|
| Slc7a1 | solute carrier family 7 (cationic amino acid transporter, y+ system), member 1 |
| Slc7a5 | solute carrier family 7 (amino acid transporter light chain, L system), member 5 |
| Slfn2 | schlafen 2 |
| Slirp | SRA stem-loop interacting RNA binding protein |
| Slit3 | slit homolog 3 (Drosophila) |
| Slpi | secretory leukocyte peptidase inhibitor |
| Smad1, 4 | SMAD family member 1, 4 |
| Smarcc2 | SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily c, member 2 |
| Smc4 | structural maintenance of chromosomes 4 |
| Smek2 | SMEK homolog 2, suppressor of mek1 (Dictyostelium) |
| Smg6, 9 | Smg-6 , 9 homolog, nonsense mediated mRNA decay factor |
| Smim29, 7 | small integral membrane protein 29, 7 |
| Smndc1 | survival motor neuron domain containing 1 |
| Snap | soluble <i>N</i> -ethylmaleimide-sensitive fusion attachment protein |
| Snare | soluble <i>N</i> -ethylmaleimide-sensitive fusion attachment protein (SNAP) receptor |
| Snhg11 | small nucleolar RNA host gene 11 |
| Snn | stannin |
| Snrpa | small nuclear ribonucleoprotein polypeptide A |
| Snx12, 14, 7, 8 | sorting nexin 12, 14, 7, 8 |
| Sobp | sine oculis-binding protein homolog (Drosophila) |
| Socs3 | suppressor of cytokine signaling 3 |
| Sod2, 3 | superoxide dismutase 2 (mitochondrial), 3 (extracellular) |
| Sox2, 4 | SRY (sex determining region Y)-box 2, 4 |
| Sp2 | Sp2 transcription factor |
| Spag5 | sperm associated antigen 5 |
| Sparc | secreted protein, acidic, cysteine-rich (osteonectin) |
| Spc25 | SPC25, NDC80 kinetochore complex component, homolog |
| Spcs3 | signal peptidase complex subunit 3 homolog |
| Specc11 | sperm antigen with calponin homology and coiled-coil domains 1-like |
| Spef1 | sperm flagellar 1 |
| Spint2 | serine peptidase inhibitor, Kunitz type, 2 |
| Spout1 | similar to LOC495800 protein |
| Spp1 | secreted phosphoprotein 1 |
| Sprr1a | small proline-rich protein 1A |
| Spsb4 | splA/ryanodine receptor domain and SOCS box containing 4 |
| Sptbn1 | spectrin, beta, non-erythrocytic 1 |
| Sqstm1 | sequestosome 1 |
| Src | SRC proto-oncogene, non-receptor tyrosine kinase |
| Srebf1 | sterol regulatory element binding transcription factor 1 |
| Srfbp1 | serum response factor binding protein 1 |
| Srgap2 | SLIT-ROBO Rho GTPase activating protein 2 |
| Srgn | serglycin |
| Srm | spermidine synthase |
| Srp14, 68 | signal recognition particle 14, 68 |
| Srpx, x2 | sushi-repeat-containing protein, X-linked, X-linked 2 |
| Srrd | SRR1 domain containing |
| Srrt | serrate, RNA effector molecule |
| Srsf5, 6 | serine/arginine-rich splicing factor 5, 6 |
| Srxn1 | sulfiredoxin 1 |
| Ssc5d | scavenger receptor cysteine rich domain containing (5 domains) |
| Ssu72 | SSU72 RNA polymerase II CTD phosphatase homolog |
| St14 | suppression of tumorigenicity 14 (colon carcinoma) |
| St3gal5 | ST3 beta-galactoside alpha-2,3-sialyltransferase 5 |
| St7l | suppression of tumorigenicity 7-like |
| Stab1 | Stabilin1 |
| Stambpl1 | similar to AMSH-family protein |
| Star | steroidogenic acute regulatory protein |
| Stard4, 9 | StAR-related lipid transfer (START) domain containing 4, 9 |
| Stat1, 2, 3 | signal transducer and activator of transcription 1, 2, 3 |
| Stbd1 | starch binding domain 1 |
| Steap3, 4 | STEAP family member 3, 4 (metalloreductase) |
| Stk11ip | serine/threonine kinase 11 interacting protein |
| Ston1 | stonin 1 |
| Strbp | spermatid perinuclear RNA binding protein |
| Strn3 | striatin, calmodulin binding protein 3 |
| Stxbp5 | syntaxin binding protein 5 (tomosyn) |
| Styxl1 | serine/threonine/tyrosine interacting-like 1 |
| Sub1 | SUB1 homolog (S. cerevisiae) |
| Sult1a1 | sulfotransferase family, cytosolic, 1A, phenol-preferring, member 1 |
| Sumf2 | sulfatase modifying factor 2 |
| Suox | sulfite oxidase |
| Surf1, 2, 4 | surfeit 1, 2, 4 |
| Suv420h1 | suppressor of variegation 4-20 homolog 1 |
| Syt | synaptogamin |
| Tacc3 | transforming, acidic coiled-coil containing protein 3 |

Table S10 continued

| Symbol | Full name |
|----------------------|---|
| Taf1d | TATA box binding protein (Tbp)-associated factor, RNA polymerase I, D |
| Tank | TRAF family member-associated NFKB activator |
| Taok3 | TAO kinase 3 |
| Tap1, 2 | transporter 1, 2 ATP-binding cassette, sub-family B (MDR/TAP) |
| Tapbp | TAP binding protein |
| Tardbp | TAR DNA binding protein |
| Tars, 2 | threonyl-tRNA synthetase, 2 (mitochondrial) |
| Tax1bp3 | Tax1 (human T-cell leukemia virus type I) binding protein 3 |
| Tbc1d20 | TBC1 domain family, member 20 |
| Tbccd1 | TBCC domain containing 1 |
| Tbx6, 21 | T-box transcription factor 6, 21 |
| Tcaf1 | TRPM8 channel-associated factor 1 |
| Tcea2, 18 | transcription elongation factor A (SII) 2, -like 8 |
| Tcf19 | transcription factor 19 |
| Tcn2 | transcobalamin 2 |
| Tcp11l2 | t-complex 11 like 2 |
| Tcp11x2 | similar to t-complex 11 protein |
| Tect2 | tectonic 2 |
| Tex19 | testis expressed 19 |
| Tfap4 | transcription factor AP-4 |
| Tfpt | TCF3 (E2A) fusion partner |
| Tfrc | transferrin receptor |
| Tgfa, b1 | transforming growth factor alpha, beta 1 |
| Tgfb1 | transforming growth factor, beta induced |
| Tgfb2 | transforming growth factor, beta receptor II |
| Tgm2 | transglutaminase 2, C polypeptide |
| Thbd | thrombospondin |
| Thbs2 | thrombospondin 2 |
| Timd/Tim1, 3, 4 | T cell immunoglobulin and mucin domain containing 1, 3, 4 |
| Timm8a1 | translocase of inner mitochondrial membrane 8 homolog a1 |
| Timp1 | Metalloproteinase inhibitor 1 |
| Tjap1 | tight junction associated protein 1 |
| Tjp3 | tight junction protein 3 |
| Tk1 | thymidine kinase 1, soluble |
| Tlcd1 | TLC domain containing 1 |
| Tlr2 | toll-like receptor 2 |
| Tm4sf1 | transmembrane 4 L six family member 1 |
| Tma16 | translation machinery associated 16 homolog |
| Tmco4 | transmembrane and coiled-coil domains 4 |
| Tmem116, 121, 123 | transmembrane protein 116, 121, 123 |
| Tmem140, 189 | transmembrane protein 140, 189 |
| Tmem173 | transmembrane protein 173 |
| Tmem192, 199 | transmembrane protein 192, 199 |
| Tmem204, 216, 229b | transmembrane protein 204, 216, 229b |
| Tmem250, 256, 268 | transmembrane protein 250, 256, 268 |
| Tmem45a, 47, 50b, 62 | transmembrane protein 45A, 47, 50b, 62 |
| Tnf | Tumor necrosis factor |
| Tnfrsf11b, 9 | tumor necrosis factor receptor superfamily, member 11b, member 9 |
| Tnip2 | TNFAIP3 interacting protein 2 |
| Tnn | tenascin N |
| Tnxb | tenascin XB |
| Tob1 | transducer of ErbB-2.1 |
| Tollip | toll interacting protein |
| Tom1 | target of myb1 homolog (chicken) |
| Tonsl | tonsoku-like, DNA repair protein |
| Top2a | topoisomerase (DNA) II alpha |
| Topbp1 | topoisomerase (DNA) II binding protein 1 |
| TP53 | tumor protein p53 |
| Tp53inp1 | tumor protein p53 inducible nuclear protein 1 |
| Tpbg1 | similar to trophoblast glycoprotein |
| Tprn | taperin |
| Tpx2 | TPX2, microtubule-associated, homolog |
| Tradd | TNFRSF1A-associated via death domain |
| Traf2 | Tnf receptor-associated factor 2 |
| Traf4af1 | TRAF4 associated factor 1 |
| Trak2 | trafficking protein, kinesin binding 2 |
| Trappc6b | trafficking protein particle complex 6B |
| Trib2, 3 | tribbles homolog 2, 3 |
| Trim25, 37, 42, 8 | tripartite motif-containing 25, 37, 42, 8 |
| Trit1 | tRNA isopentenyltransferase 1 |
| Trmt6 | tRNA methyltransferase 6 homolog |
| Trpt1 | tRNA phosphotransferase 1 |
| Tsc22d3 | TSC22 domain family, member 3 |
| Tsen54 | tRNA splicing endonuclease 54 homolog |
| Tsg101 | tumor susceptibility 101 |

Table S10 continued

| Symbol | Full name |
|--------------------|---|
| Tspan2, 3, 5, 7, 8 | tetraspanin 2, 3, 5, 7, 8 |
| Tssc4 | tumor suppressing subtransferable candidate 4 |
| Ttc30b | tetratricopeptide repeat domain 30B, 39C |
| Ttc32 | tetratricopeptide repeat domain 32 |
| Ttyh3 | tweety homolog 3 (Drosophila) |
| Tuba1a, b4a,b4b, 5 | tubulin, alpha 1A, beta 4A class Iva, beta 4B class IVb, beta 5 class I |
| Txnip | thioredoxin interacting protein |
| Tyro3 | TYRO3 protein tyrosine kinase |
| Tyw5 | tRNA-yW synthesizing protein 5 |
| Uap1, 111 | UDP-N-acteylglucosamine pyrophosphorylase 1, 1-like 1 |
| Uba7 | ubiquitin-like modifier activating enzyme 7 |
| Ubal2 | family with sequence similarity 100, member B |
| Ube2c | ubiquitin-conjugating enzyme E2C |
| Ube4b | ubiquitination factor E4B |
| Ubl5 | ubiquitin-like 5 |
| Ubqln1 | ubiquilin 1 |
| Uchl5 | ubiquitin carboxyl-terminal hydrolase L5 |
| Uck2 | uridine-cytidine kinase 2 |
| Ufc1 | ubiquitin-fold modifier conjugating enzyme 1 |
| Unc5b | unc-5 homolog B |
| Upp1 | uridine phosphorylase 1 |
| Uprt | uracil phosphoribosyltransferase (FUR1) homolog (S. cerevisiae) |
| Uqcc2 | ubiquinol-cytochrome c reductase complex assembly factor 2 |
| Uqcr11, h | ubiquinol-cytochrome c reductase, complex III subunit XI, hinge protein |
| Uri1 | URI1, prefoldin-like chaperone |
| Usp14, 18, 2, 42 | ubiquitin specific peptidase 14, 18, 2, 42 |
| Utrn | utrophin |
| Vamp1 | vesicle-associated membrane protein 1 |
| Vapa | VAMP (vesicle-associated membrane protein)-associated protein A |
| Vax2 | ventral anterior homeobox 2 |
| Vcam1 | vascular cell adhesion molecule 1 |
| Vcl | vinculin |
| Vegfa | vascular endothelial growth factor A |
| Vegfr2 | kinase insert domain receptor (kdr) |
| Vhl | von Hippel-Lindau tumor suppressor |
| Vim | vimentin |
| Vkorc1 | vitamin K epoxide reductase complex, subunit 1 |
| Vldlr | very low density lipoprotein receptor |
| Vof16 | ischemia related factor vof-16 |
| Vom1r57, 61 | vomer nasal 1 receptor 57, 61 |
| Vps35 | vacuolar protein sorting 35 homolog |
| Vsn1 | visinin-like 1 |
| Vwa1 | von Willebrand factor A domain containing 1 |
| Vwf | von Willebrand factor |
| Wars | tryptophanyl-tRNA synthetase |
| Wdcp | WD repeat and coiled coil containing |
| Wdfy1 | WD repeat and FYVE domain containing 1 |
| Wdr12, 25, 35l, 37 | WD repeat domain 12, 25-like, 35-like, 37 |
| Wdr53, 70, 77, 89 | WD repeat domain 53, 70, 77, 89 |
| Wfdc1 | WAP four-disulfide core domain 1 |
| Wfdc21 | WAP four-disulfide core domain 21 provided |
| Whamm | WAS protein homolog associated with actin, golgi membranes and microtubules |
| Whsc1 | Wolf-Hirschhorn syndrome candidate 1 (human) |
| Wnt5a | wingless-type MMTV integration site family, member 5A |
| Wwc2 | WW and C2 domain containing 2 |
| Xdh | xanthine dehydrogenase |
| Xpo1 | exportin 1, CRM1 homolog |
| Xpot | exportin, tRNA (nuclear export receptor for tRNAs) |
| Xylb | xylulokinase homolog (H. influenzae) |
| Yae1d1 | Yae1 domain containing 1 |
| Yars | tyrosyl-tRNA synthetase |
| Yipf2 | Yip1 domain family, member 2 |
| Ylpm1 | YLP motif containing 1 |
| Ypel5 | yippee-like 5 (Drosophila) |
| Yrdc | yrdC domain containing (E.coli) |
| Zak | sterile alpha motif and leucine zipper containing kinase AZK |
| ZAP70 | zeta chain of T cell receptor associated protein kinase 70 |
| Zbtb21 | zinc finger protein 295 |
| Zbtb38, 7b, 8b | zinc finger and BTB domain containing 38, 7B, 8B |
| Zbtb8os | zinc finger and BTB domain containing 8 opposite strand |
| Zc3h11a, 8 | zinc finger CCCH-type containing 11A, 8 |
| Zcchc2 | zinc finger, CCHC domain containing 2 |
| Zdhhc14, 16, 2 | zinc finger, DHHC-type containing 14, 16, 2 |
| Zeb2 | zinc finger E-box binding homeobox 2 |
| Zfand2a | zinc finger, AN1-type domain 2A |

Table S10 continued

| Symbol | Full name |
|-----------------------|--|
| Zfp207, 278 | zinc finger protein 207, 278 |
| Zfp280c | suppressor of hairy wing homolog 3 |
| Zfp592, 775, 787, 846 | zinc finger protein 592, 775, 787, 846 |
| Zfr | zinc finger RNA binding protein |
| Zmynd15 | zinc finger, MYND-type containing 15 |
| Znf24 | zinc finger protein 191 |
| Znrf4 | zinc and ring finger 4 |
| Zscan2, 21 | zinc finger and SCAN domain containing 2, 21 |

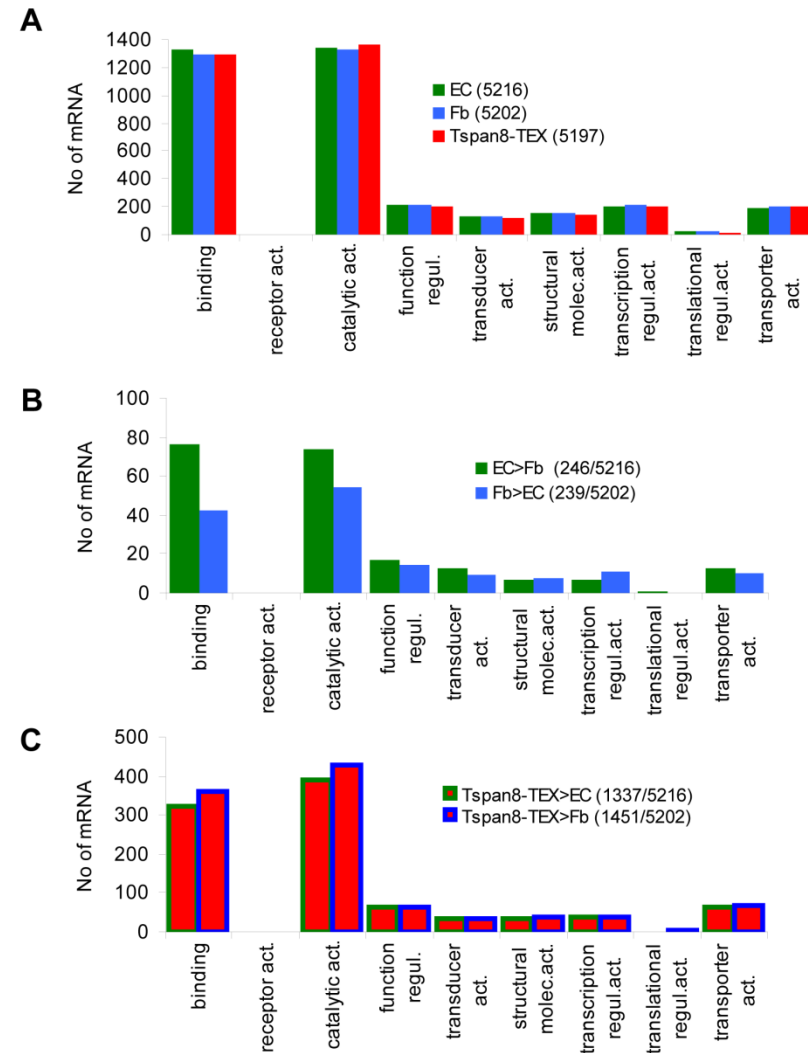


Figure S1 **Functional assignment of mRNA in endothelial cells, fibroblasts, and AS-Tspan8-TEX.** The mRNA profile of EC, Fb, and AS-Tspan8-TEX was evaluated by DS. Molecular functions (Panther pathway analysis) of genes with a signal strength ≥ 1000 are shown. (A) Panther tool analysis of molecular functions of 5216, 5202 and 5197 genes displayed a signal strength of >1000 in EC, Fb and AS-Tspan8-TEX, respectively; (B) Panther tool analysis of 246 mRNA in EC and 239 mRNA in Fb with an ≥ 2 -fold increase in EC versus Fb and vice versa. (C) Panther tool analysis of Tspan8-TEX RNA that was ≥ 2 -fold increased compared to EC and Fb.

EC, Fb, and AS-Tspan8-TEX showed a dominance of binding and catalytic activity without significant differences between the three mRNA preparations. However, EC RNA showed a slight preponderance in binding and catalytic activity and Fb in transcriptional regulator activation. No particular changes were seen in the distribution of molecular functions of AS-Tspan8-TEX versus EC or Fb mRNA.

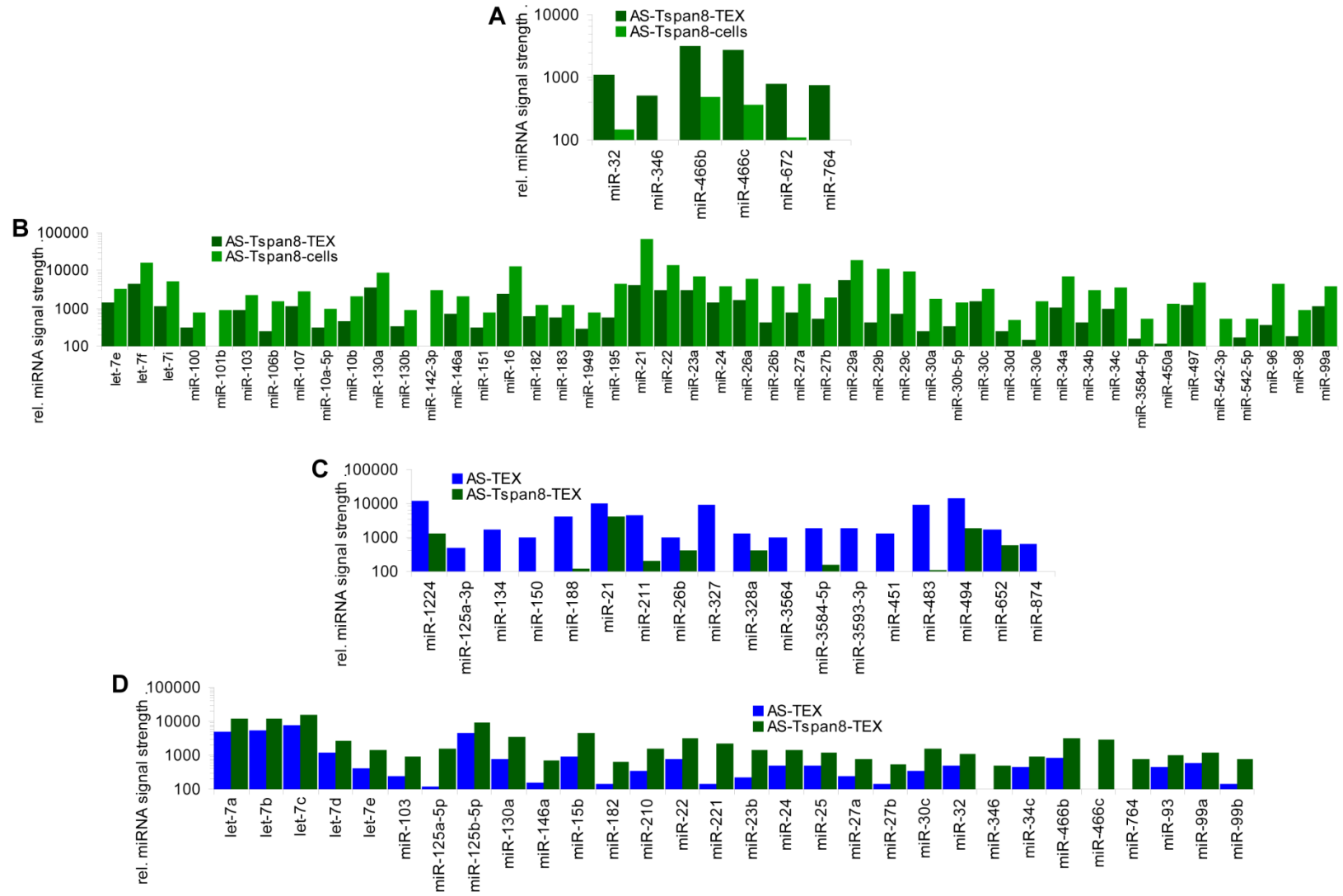
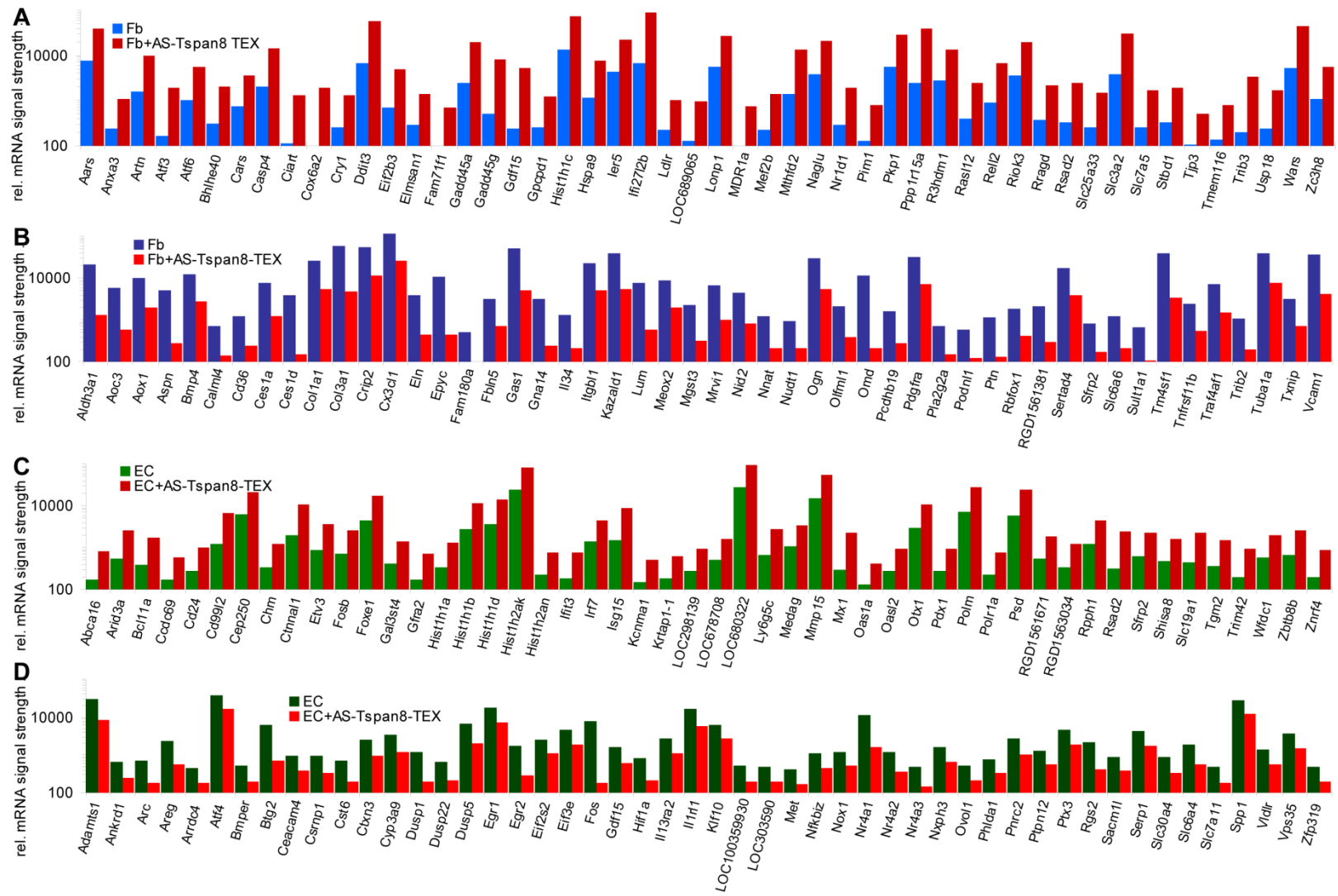




Figure S2 **Distinct miRNA recovery in AS, AS-Tspan8-, ASML- and ASML-Tspan8kd TEX and cells.** The miRNA profile was approached using Agilent miRNA arrays. Only miRNA displaying at least in one of the samples a signal strength of >200 and a ≥ 2 -fold difference are shown. (A,B) miRNA higher in AS-Tspan8 TEX than cells and vice versa. (C,D) miRNA higher in AS-TEX than AS-Tspan8-TEX and vice versa. (E,F) miRNA higher or lower in ASML- than ASML-Tspan8kd TEX in comparison to the miRNA in AS-Tspan8- versus AS-TEX. Unexpectedly, a higher number of miRNA are more abundant in AS-Tspan8 cells than -TEX and AS-Tspan8-TEX showed more frequently upregulated miRNA than AS-TEX. This feature was confirmed for ASML- versus ASML-Tspan8kd-TEX. The findings are in line with a minor contribution of Tspan8 to miRNA recruitment into TEX.



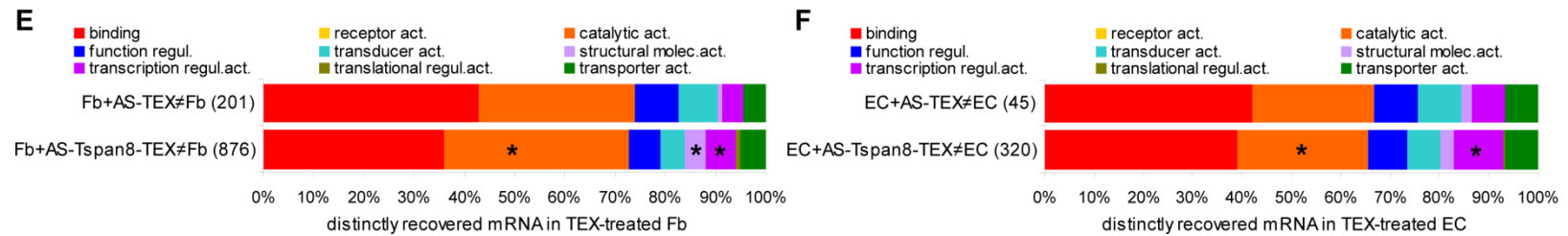


Figure S3 **Distinct mRNA recovery in fibroblasts and endothelial cells cocultured with AS-Tspan8-TEX.** Fb and EC were cocultured for 2d-3d with 30µg/ml AS-Tspan8-TEX. mRNA was isolated and subjected to DS. The 50 mRNA with the strongest change in expression are shown for (A,B) Fb mRNA and (C,D) EC mRNA. Full name of gene symbols: Table S10. (E,F) Molecular function of up- or downregulated Fb and EC mRNA after coculture with TEX. The percent of mRNA engaged in selective molecular functions is shown. Fb and EC respond more frequently with upregulation of catalytic and transcription regulators to AS-Tspan8- than AS-TEX.

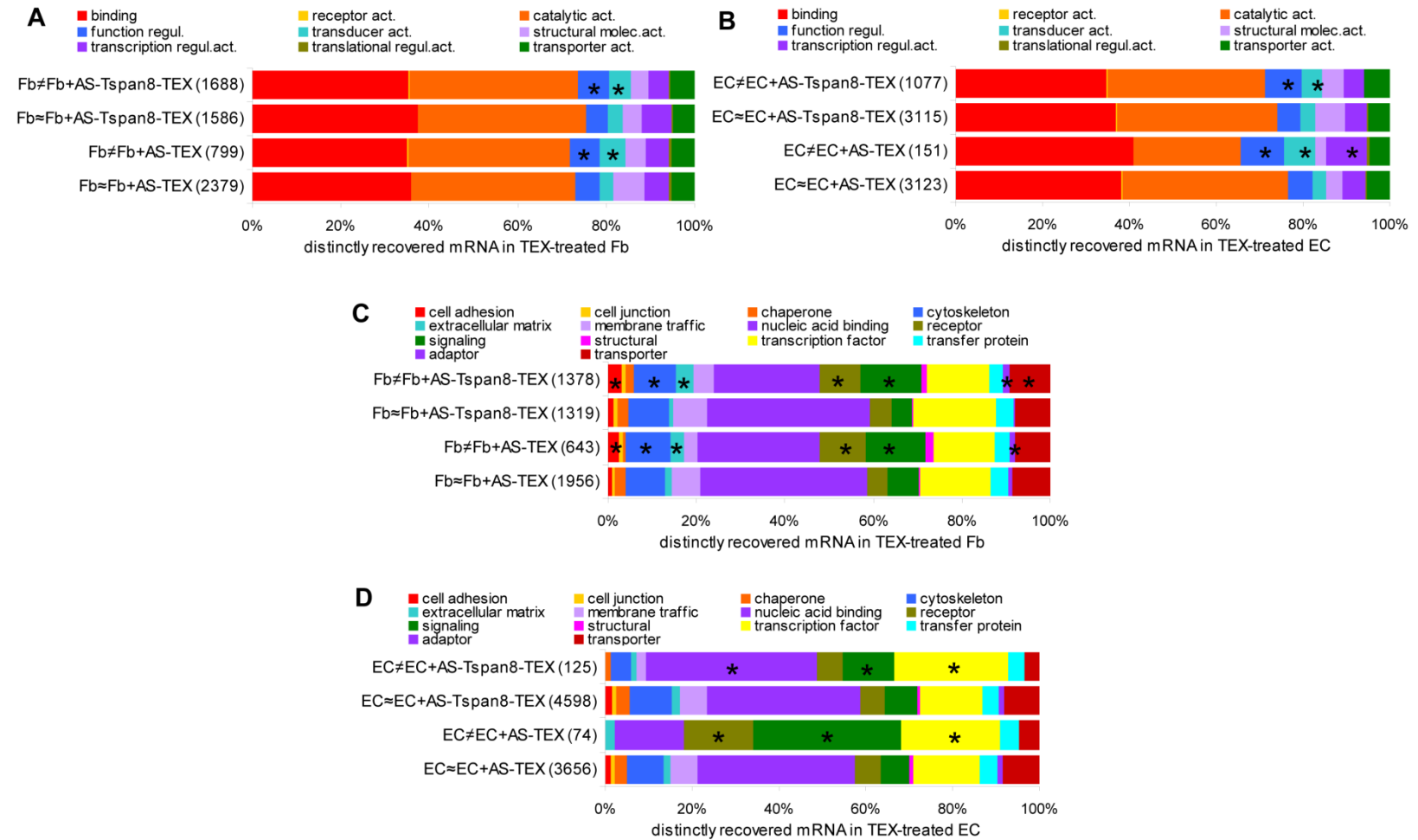
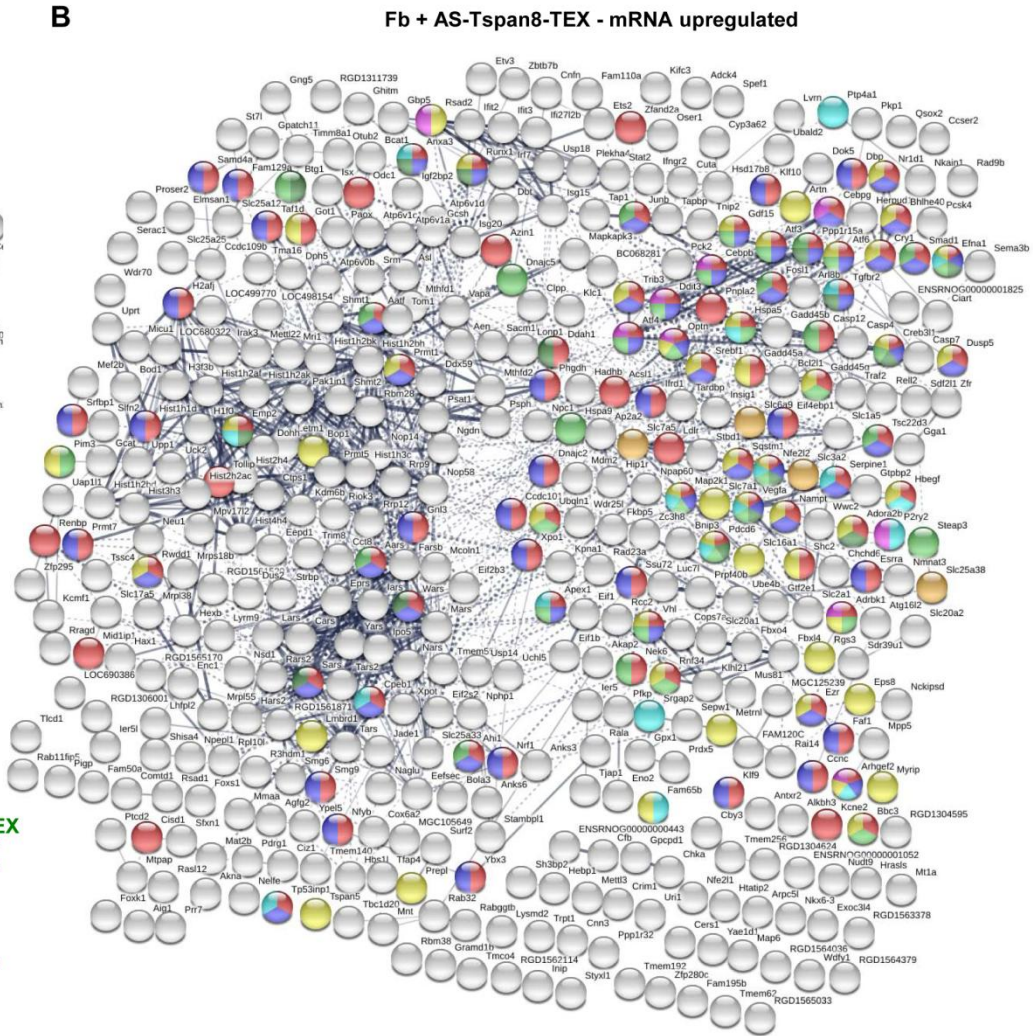
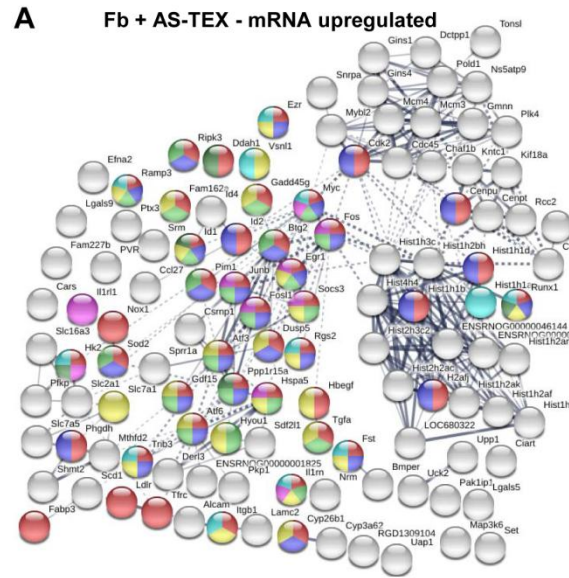


Figure S4 **Overview on molecular functions of fibroblast and endothelial cell mRNA after coculture with AS- or AS-Tspan8-TEX.** Panther pathway analysis of Fb and EC mRNA that expression remained unchanged or changed by AS- or AS-Tspan8-TEX treatment in (A,B) Fb and (C,D) EC according to molecular functions (A,B) and protein classes (C,D). Molecular functions and protein classes that were expanded by AS- and AS-Tspan8-TEX treatment are indicated by a black *. Particularly sorting according to protein classes revealed abundant changes in TEX-treated Fb and EC.

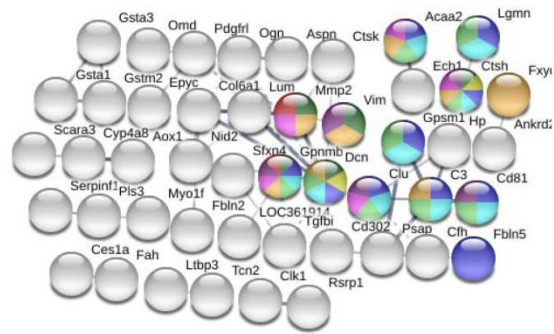


C overrepresented edges – upregulated mRNA process

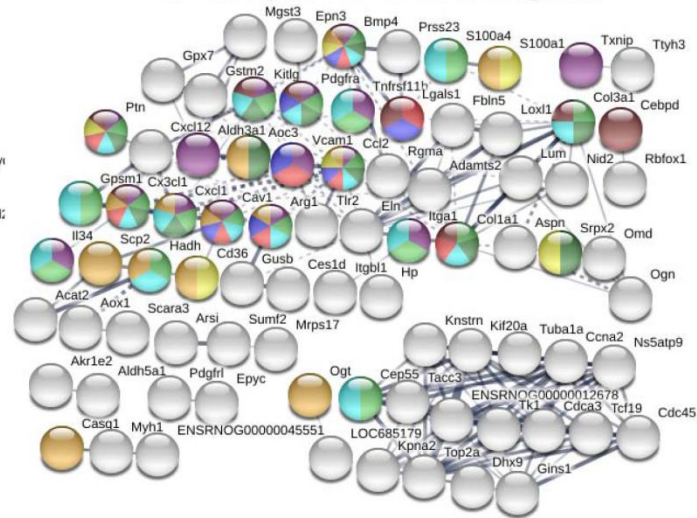
| process | Fb + AS-TEX | Fb + AS-Tspan8-TEX |
|--------------------------|-----------------------|--------------------|
| regulation metabolism | 7.77×10^{11} | 5.33×10^8 |
| regulation gene express. | 2.84×10^8 | 5.33×10^8 |
| regulation apoptosis | 3.19×10^8 | 0.00038 |
| regulation signaling | 1.17×10^5 | 0.00430 |
| regulation cytokines | 0.00080 | 0.00247 |
| regulation angiogenesis | 0.0063 | 1.49×10^5 |
| regulation migration | 0.0184 | 0.0041 |
| regulation transport | 0.0363 | 0.0279 |

D

Fb + AS-TEX - mRNA downregulated



Fb + AS-Tspan8-TEX - mRNA downregulated

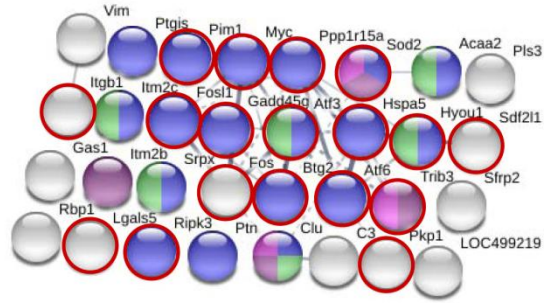


overrepresented edges
downregulated mRNA
regulation of biological processes

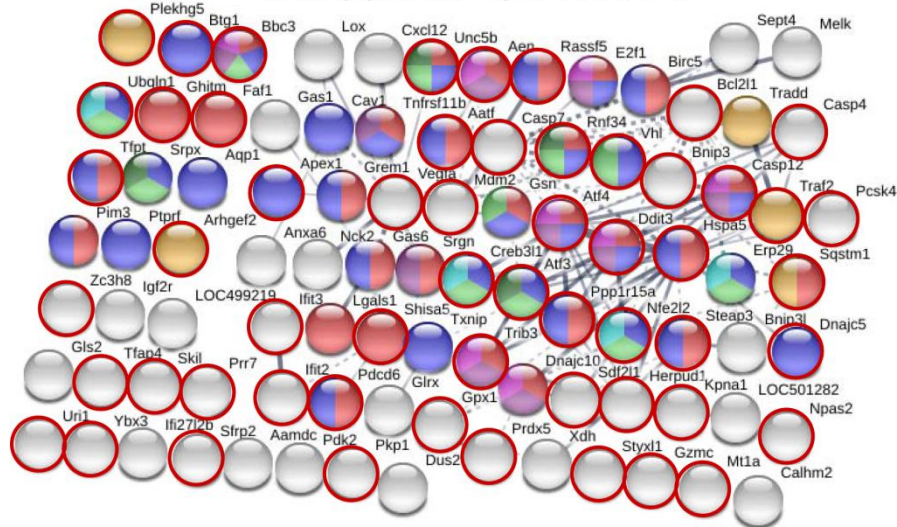
- adhesion
- migration
- transport
- cell-cell communication
- signaling
- activation
- proliferation
- cell death
- differentiation
- angiogenesis

E

Altered apoptosis in AS-TEX treated Fb



Altered apoptosis in AS-Tspan8-TEX treated Fb



Altered apoptosis (overrepresented) in AS-and AS-Tspan8-TEX treated Fb

| Apoptosis | AS-TEX | Fb AS-Tsp8-TEX |
|-------------------------------------|--------|----------------|
| Apoptotic process | -- | 29 |
| Apoptotic signalin pathway | 4 | 10 |
| Death receptor signaling | -- | 5 |
| Intrinsic apoptosis sign. pathway | 3 | 8 |
| Reg. apoptotic process | 18 | 35 |
| Reg. apoptotic signaling pathway | 6 | 11 |
| Reg. extr. apopt. signal. pathway | -- | 4 |
| Reg.intrins. apopt. signal. pathway | -- | 4 |

upregulated mRNA ○

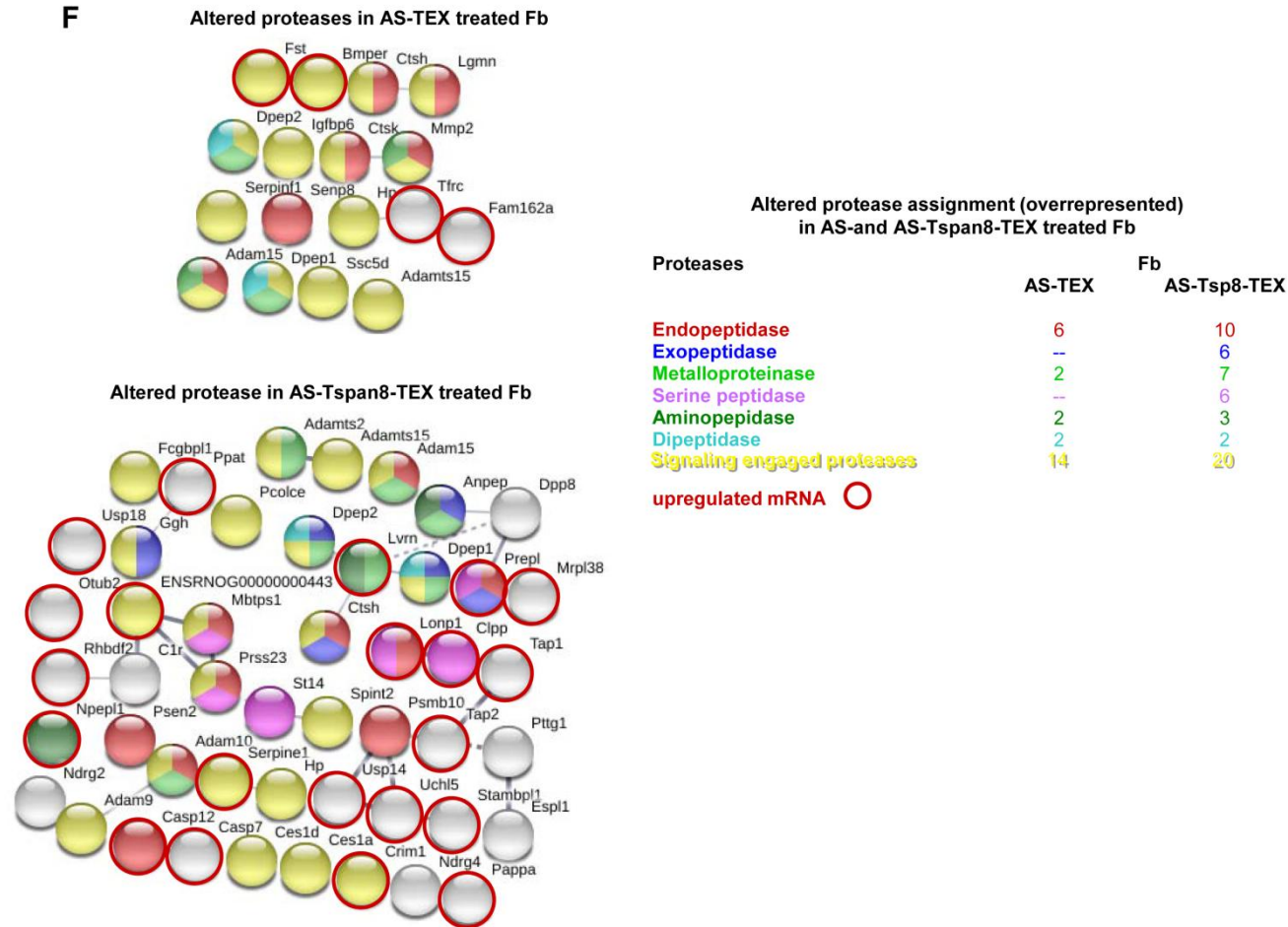
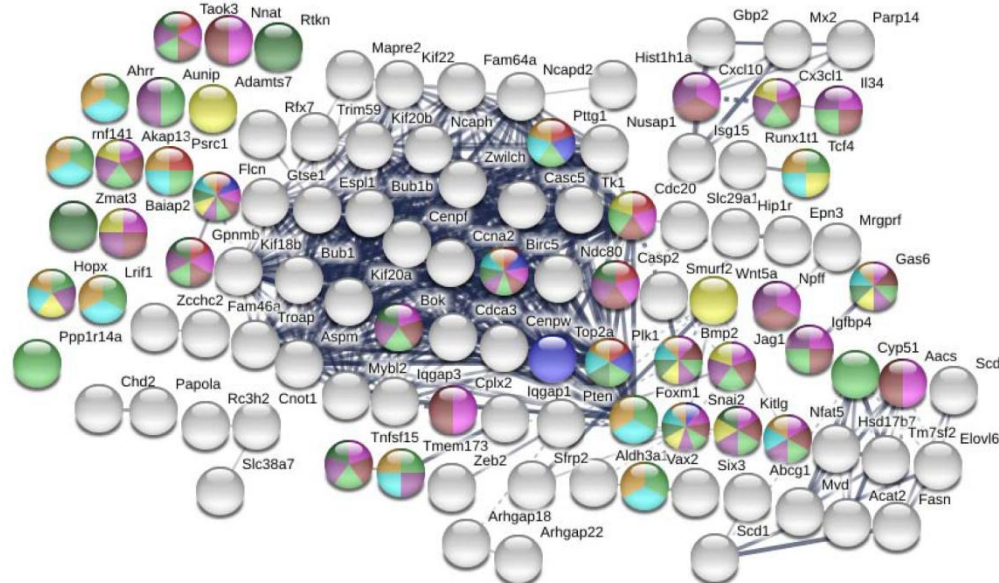


Figure S5. AS- and AS-TEX-promoted fibroblast modulation. mRNA was evaluated in AS- and AS-Tspan8-TEX-treated Fb for up- or downregulation compared to untreated Fb. Analyses included mRNA with a signal strength ≥ 1000 and ≥ 2 -fold difference between untreated and TEX-treated Fb. Analysis was performed using the STRING functional protein analysis program. (A-C) mRNA upregulated in (A) AS-TEX- and (B) AS-Tspan8-TEX-treated Fb, and (C) engagement of overrepresented edges in the regulation of biological processes corresponds to Fig.4A-4C, but includes non-connected nodes; (D) mRNA downregulated in AS-TEX- and AS-Tspan8-TEX-treated Fb and color code definition of overrepresented edges according to regulation of biological processes (significance values being given in Fig.4D). (E) Altered apoptosis related mRNA in AS- and AS-Tspan8-TEX treated Fb and number of mRNA in overrepresented edges. (F) Altered protease mRNA in AS- and AS-Tspan8-TEX treated Fb and number of mRNA in overrepresented edges. (E,F) Upregulated mRNA is indicated by a red circle. Full name of gene symbols: Table S10.

AS-Tspan8-TEX also affected downregulation of proteins more strongly than AS-TEX, the only exception being cell death regulation. This is reflected by 37.5% of apoptosis regulating genes being upregulated in AS-TEX-treated, but only 18.6% in AS-Tspan8-TEX-treated Fb. There was no evidence for a strong impact of AS- and AS-Tspan8-TEX on modulating the Fb protease profile. However, exopeptidases are only upregulated after AS-Tspan8-TEX treatment. These findings suggest that AS-Tspan8-TEX promote Fb invasion mostly via signaling initiated cell adhesion, migration and cell-cell communication.

A

EC + AS-TEX - mRNA upregulated



**overrepresented edges -
upregulated mRNA**

- cell cycle
- chromosome organization
- signaling
- cell-cell communication
- metabolism
- response to stimulus
- differentiation
- cell death
- transcription
- RNA metabolism

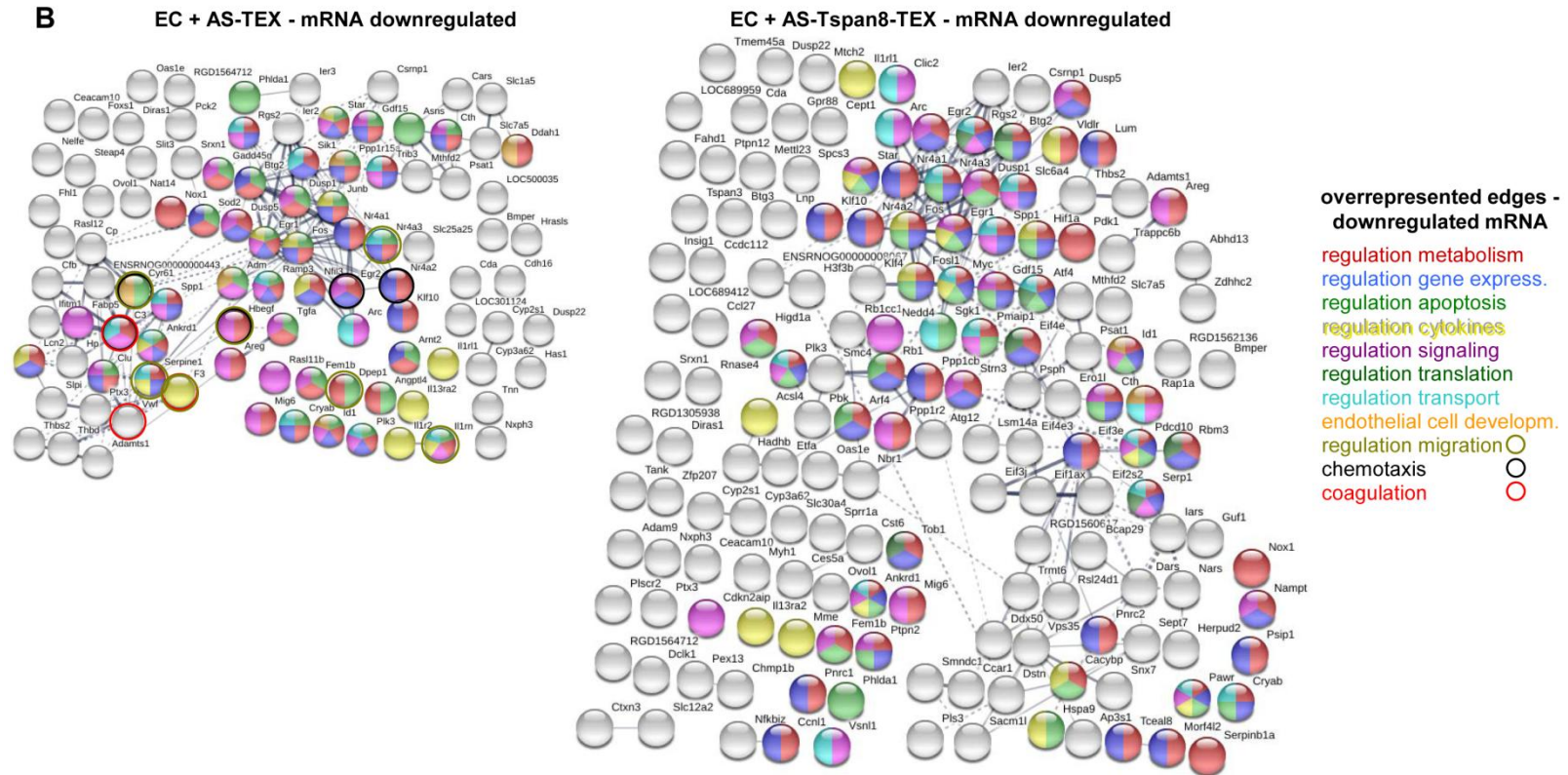


Figure S6. STRING analysis of overrepresented edges in AS- and AS-Tspan8-TEX-treated endothelial cells. STRING analysis of AS- and AS-Tspan8-TEX-treated EC was performed under less stringent conditions (signal strength ≥ 500 , ≥ 1.5 -fold difference). (A) Overrepresented nodes of mRNA with increased expression in AS-TEX-treated EC, overrepresented nodes are indicated by a color code; (B) Overrepresented nodes of mRNA with decreased expression in AS-TEX- and AS-Tspan8-TEX-treated EC, overrepresented nodes are indicated by a color code. . Full name of gene symbols: Table S10.

A

predicted targets of miRNA downregulated after coculture with AS-TEX or AS-Tspan8-TEX

| miR-32 | miR-129 | miR-466b/c | miR-500 | miR-29b | miR-34b | miR-193-3p | miR-214 | miR-222 | miR-301a | miR-1224 | miR-3584-5p | miR-34c | miR-101a | miR-140 | miR-494 | |
|---------------|---------|---------------|---------|-----------------|--------------|----------------|----------|---------------|----------|----------------|----------------|--------------|------------------|----------------|----------------|--------------|
| ADCY3 | ARRDC3 | ACSL4 | SYYS1 | <u>ADAMTS10</u> | ADCY5 | NAPEPLD | AP2M1 | AURKA | ARNT | ACBD5 | ADORA1 | APEX1 | ADCY5 | <u>ABHD17B</u> | ARL4C | ARHGAP5 |
| ADRB1 | IGIP | BRINP3 | GPR61 | ADAMTS2 | ARHGAP1 | NCOA1 | ARHGEF12 | CCDC152 | BTG2 | ADAM12 | CBX3 | ATXN7L1 | <u>ARHGAP199</u> | <u>AEBP2</u> | CCNT2 | CYSTMM1 |
| ANKIB1 | PMEPA1 | CALCOCO1 | PLP1 | AKT2 | ARHGAP26 | NOS1 | ATM | CD247 | CASP10 | BTBD3 | FANCD2 | BAZ2A | <u>BCL2</u> | AKT3 | CLDN1 | FGFR2 |
| ANKRD44 | ITF200 | CAT | LPIN1 | AKT3 | AV3 | NOTCH1 | BCL2L2 | CDC42 | CGDC64 | DSEL | FOSB | CACNG7 | CACNA1E | AP3S1 | CORO2A | HMOX1 |
| ARMC1 | CXorf21 | CEACAM1 | DCUN1D1 | BRWD3 | <u>BCL2</u> | NRIP3 | CALM1 | CTSO | CLVS2 | ESR1 | GLYCT1 | <u>CCDC8</u> | <u>CASP2</u> | APP | <u>CFEB3L1</u> | IRS1 |
| ATP2A2 | CIB2 | CNGA2 | PTPRD | C1QTNF6 | CACNA1E | PACS1 | CBX7 | CYTL1 | DCUN1D4 | FBXO28 | GTDC1 | CDC45 | CCND1 | ASPN | EPB41L2 | MDM2 |
| C16orf52 | CBBX4 | DCLK1 | SNX18 | CDC42 | <u>CASP2</u> | CCND1 | CCND1 | DIS3 | FAM214A | FOXF2 | H3F3B | CIR1 | <u>E2F3</u> | CAV3 | FGF9 | PGPEP1L |
| CACNA1C | HMGB1 | <u>ELQV16</u> | | COL4A5 | CCND1 | PLA2G2F | CNOT6 | DNAJB9 | FOS | HBP1 | <u>LBP</u> | CIT | E2F5 | CDYL | GUCD1 | PIK3R3 |
| CALM1 | GPR135 | ENPP5 | | COL9A1 | CCNE2 | PLCG1 | DCAF7 | FBXO30 | FRS2 | IMPDH1 | MED18 | CYP2W1 | FAM167A | EYA1 | HDGFRP3 | <u>PRRG1</u> |
| <u>CDCA7L</u> | | GPM6A | | COL1A1 | <u>E2F3</u> | PLN | DGCR2 | GLRA3 | GAB1 | <u>JRF1</u> | MED20 | <u>DACT3</u> | FAM76A | EZH2 | KATNBL1 | PTEN |
| CEP41 | | KCNV1 | | EIF4E2 | E2F5 | PRKCE | E2F6 | GLUD2 | GNAI2 | KLF7 | MRV1 | <u>DAK</u> | FGD6 | FAM60A | KCTD6 | PTPN11 |
| DNAJB9 | | KHDRBS2 | | <u>ELN</u> | ERC1 | PRKCQ | FAIM2 | IL1A | GNAI3 | LMLN | NIP2 | DBNDD2 | GAB1 | EGFR3 | KLF5 | |
| EDNRB | | MAF | | FBN1 | FAM167A | PRKD1 | FHDC1 | KCNH7 | IRX5 | LONNRF1 | OST4 | DEFB4B | GNAI2 | FLRT3 | LHFPL2 | |
| FBXW7 | | MOBP | | FRS2 | FAM76A | RAB43 | GLIPR2 | LUZP2 | KDR | NFIA | PAQR4 | EBF2 | GNAO1 | FRS2 | MAFG | |
| FRS2 | | RBL2 | | GAB1 | FAM83H | RALGDS | GPR27 | MEMO1 | MAPK10 | NPAT | PDE1B | <u>ERF</u> | HCNN3 | GAB1 | MARCKS | |
| HANND2 | | SLC25A10 | | HBEGF | GAB1 | RRAS | GRB7 | MYH8 | MEGF9 | PAPD4 | <u>POMGNT1</u> | FNDC4 | IKBKE | GLTSCR1 | MBNL3 | |
| HERPUD2 | | SLC2A13 | | IFI30 | GMFB | <u>SLC27A4</u> | GREM1 | NF2 | SLAIN1 | <u>PPP1R9B</u> | GATS | GATS | LDHA | GPR27 | MEIS2 | |
| HIPK3 | | TMEM38B | | IREB2 | GNAI2 | SMAD4 | HOXD113 | <u>NUDT15</u> | PAK1 | SNAP25 | PSMA4 | IQSEC3 | MAP2K1 | HTRA3 | MMD | |
| IRS2 | | VSNL1 | | IRS1 | GNAO1 | SMIIM15 | ING5 | PAX8 | PIK3R1 | SYBU | RAB2A | KIAA0247 | MAPK13 | JAK2 | MSMP | |
| ISCA1 | | | | MAP2K4 | HNRNP1A | SNX15 | KCNJ2 | PLA2G4C | PLCL2 | TRERF1 | RGAG4 | LAS1L | MDM4 | KCNH7 | NFE2L2 | |
| ITPR1 | | | | MAPK10 | IKBKE | SRC | KIT | PPP3CC | PRUNE | WDR20 | SELK | LPAR5 | NAPEPLD | LCOR | PCDH8 | |
| MIA3 | | | | NASP | LDHA | <u>TP53</u> | KLB | RBFOX1 | PVRL1 | ZIC5 | SKP1 | MANSC1 | NCOA1 | MAPK1 | PDGFR | |
| MMP16 | | | | NFIA | <u>LIMD2</u> | TTC19 | KRAS | RNF146 | RBM24 | | STX5 | MT-ND4L | NNAV3 | METAP1 | RNF19A | |
| MYO1B | | | | PDGFC | MAP2K1 | VEGFA | MAPK10 | RPAIN | RFX7 | | SYPL2 | NUTF2 | NOS1 | MMORN4 | RRAGC | |
| NCOA1 | | | | PIK3R1 | MAP3K7CL | ZDHHC16 | MMP19 | SAPCD1 | ST8SIA1 | | UBXNN1 | PAX1 | NOTCH1 | MYCN | SEPT2 | |
| PAPD7 | | | | PIK3R3 | MAPK13 | | MYCN | SEN8 | | | | PEA15 | NTN1 | NDFIP1 | SLC16A6 | |
| PIK3R3 | | | | PMP22 | | | PAK4 | SPRYD4 | | | | PLP2 | PACS1 | NLK | SMOX | |
| PLEKHB2 | | | | PTEN | | | PITX2 | ST3GAL2 | | | | POLE3 | PGF | NPNT | SNX2 | |
| PRKAR1B | | | | <u>RNF39</u> | | | PLAU | TCF7L2 | | | | PPP1R12B | PLA2G2F | PCGF5 | SSR2 | |
| PRKAR2B | | | | SLC30A3 | | | PPP2R4 | TCF7L2 | | | | PRR13 | PLCG1 | PHLDA1 | SSR3 | |
| PRKCE | | | | STAT3 | | | PPP2R5C | TMEM177 | | | | REXO2 | PLN | PIEZO1 | <u>STAT1</u> | |
| RAP1B | | | | SUV420H2 | | | SLAH1 | TNFAIP6 | | | | RNF165 | PRKCE | PIK3C2A | TGFB3 | |
| RNF38 | | | | SYPL2 | | | SLC39A5 | TNFSF18 | | | | RSU1 | PRKCQ | PIK3C2B | TMEM260 | |
| RSBN1 | | | | <u>TET3</u> | | | SRSF2 | TNFSF8 | | | | SCAMP5 | PRKD1 | PLCG1 | TNFSF8 | |
| SLC2A3 | | | | TGFB2 | | | STMN1 | UTP14C | | | | SEC14L1 | RALGDS | PTGS2 | TSSK2 | |
| SSBP3 | | | | TGFB3 | | | TAOK1 | | | | | SIX3 | RRAS | RAC1 | UBAP2L | |
| TMEM229A | | | | TMEM236 | | | TGFB2 | | | | | SST | RTN4RL1 | RALBP1 | WNT11 | |
| UPG2 | | | | <u>TSPAN4</u> | | | ZBTB5 | | | | | TVP23C | SCN2B | RANBP9 | WNT9A | |
| WASL | | | | VEGFA | | | | | | | | U2AF1L4 | SMAD4 | RAP1B | ZNF131 | |
| | | | | YBX3 | | | | | | | | USP46 | SRC | SLC30A4 | ZNF800 | |
| | | | | ZBTB5 | | | | | | | | VAMP2 | <u>TP53</u> | SMAD2 | | |
| | | | | | | | | | | | | ZNF784 | TRANK1 | TGFA | | |
| | | | | | | | | | | | | | TTC19 | TGFBR1 | | |
| | | | | | | | | | | | | | VEGFA | UBE2D1 | | |

AS-TEX: green
AS-Tspan8-TEX: red
AS- & AS-Tspan8-TEX: violet
underlined: mRNA upregulated

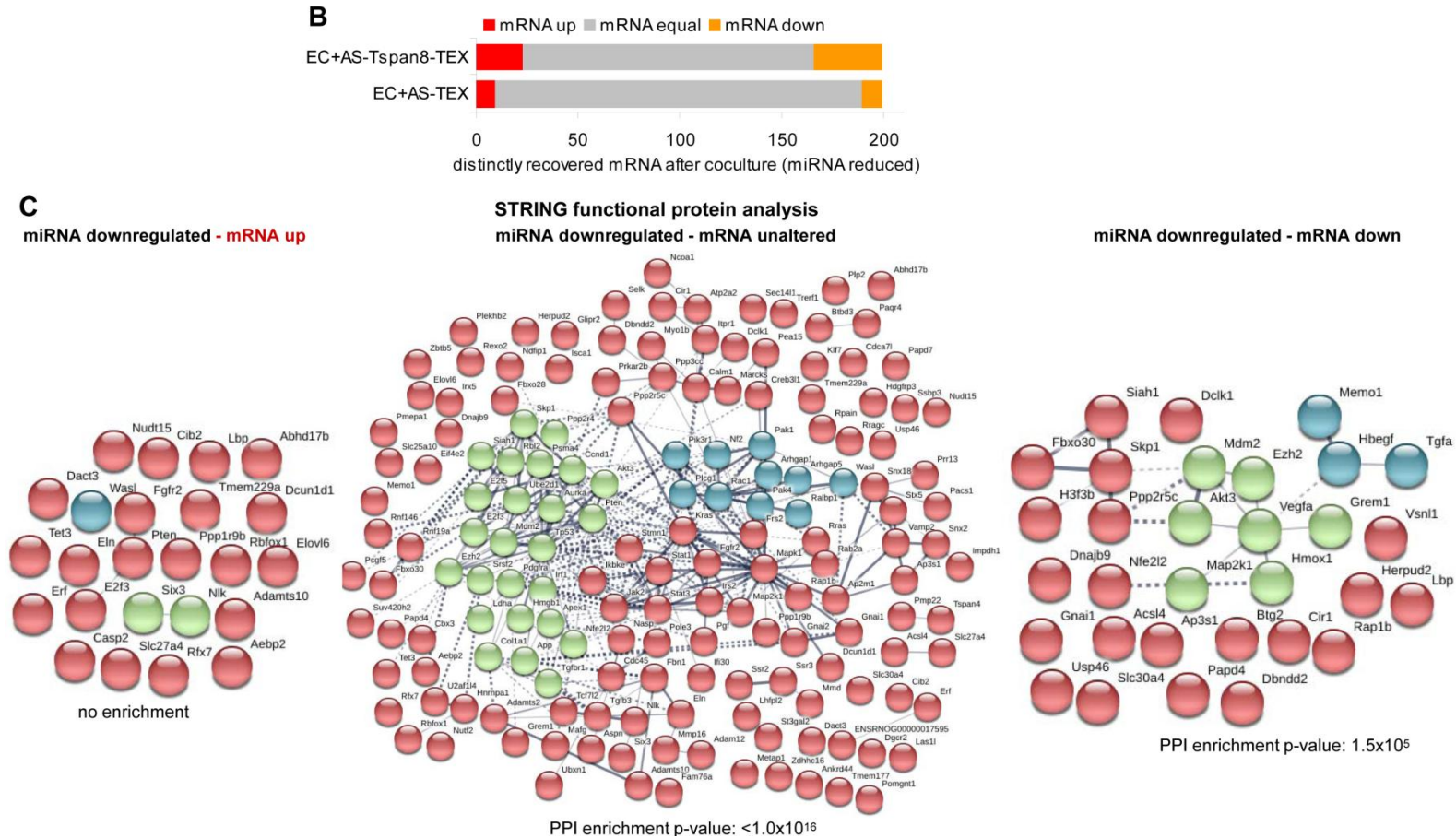


Figure S7. Recovery and functional assignment of predicted target mRNA of downregulated miRNA in TEX-treated endothelial cells. (A) Predicted and confirmed targets of downregulated miRNA after AS- or AS-Tspan8-TEX treatment were searched for by <http://www.microrna.org> and <http://www.targetscan.org>. The threshold level of mRNA was set to signal strength of ≥ 500 and a ≥ 1.5 -fold increase; mRNA upregulated after AS-TEX treatment: green, after AS-Tspan8-TEX treatment: red, after AS- and AS-Tspan8-TEX treatment: violet, upregulated predicted mRNA is underlined. (B) Summary of the recovery of predicted mRNA of miRNA expressed at a lower level in EC after coculture with AS- or AS-Tspan8-TEX; mRNA upregulated after TEX treatment: red, unaltered: grey, downregulated: orange. (C) STRING functional protein network pathway analysis of mRNA targets of miRNA downregulated in TEX-treated EC. Full name of gene symbols: Table S10. Reduced miRNA expression in TEX-treated EC is rarely accompanied by mRNA release from repression. "Suppression-released" mRNA shows no edge enrichment.

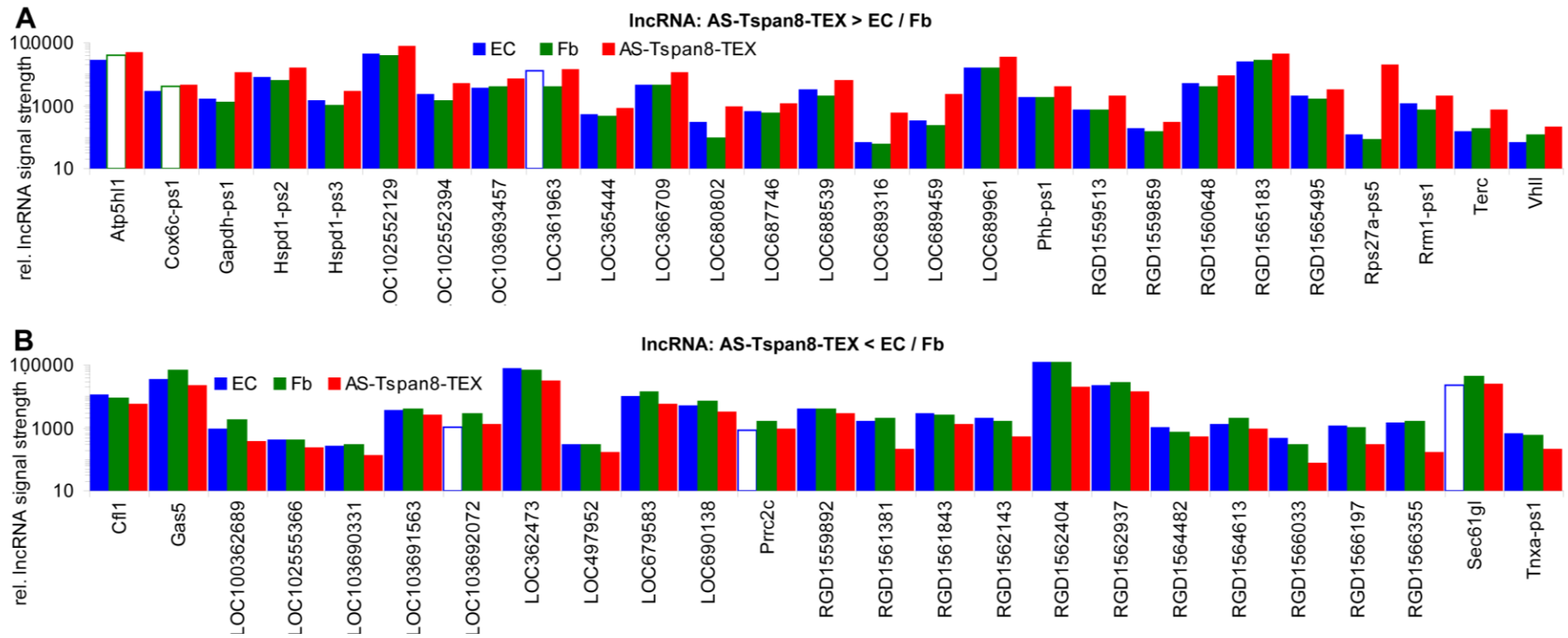


Figure S8. Pseudogenes and lncRNA in fibroblasts, endothelial cells and TEX. (A) Higher and (B) lower nc pseudogene and lncRNA recovery in AS-Tspan8-TEX compared to EC and Fb, a ≥ 1.5 -fold difference being accepted as significant (filled bars), missing differences: empty bar. Full name of gene symbols: Table S8, S9G.