**Table S6. Literature support for the upregulated genes in the top 500 DEGs.**

|  |  |  |
| --- | --- | --- |
| Name | Note | Ref. |
| MMP11 | local stromal MMP-11 might also regulate mammary epithelial cell behavior mechanically by promoting extracellular matrix stiffness. | 1 |
| TOP2A | genistein selectively inhibited human topo II activity. Genistein prevented the proliferation of HCT116 human colon carcinoma cells with an LD50 of 94.0 µM and it halted the cell cycle in G2/M phase.  | 2 |
| TPX2 | TPX2 plays an important role in promoting tumorigenesis and metastasis of human colon cancer. | 3 |
| MYBL2 | Mybl2 upregulation induces fast growth and progression of premalignant and malignant liver, through cell cycle deregulation and activation of genes and pathways related to tumor progression. | 4 |
| CA9 | CA IX is involved in tumorigenesis through many pathways, such as pH regulation and cell adhesion control | 5 |
| UBE2C | Inhibition of ubiquitin conjugating enzyme UBE2C reduces proliferation and sensitizes breast cancer cells to radiation, doxorubicin, tamoxifen and letrozole | 6 |
| COL10A1 |  |  |
| CENPF | silencing CENPF could decrease the ability of the cells to proliferate, form colonies and induce tumor formation in nude mice. Silencing CENPF also resulted in the cell cycle arrest at G2/M checkpoint by down-regulating cell cycle proteins cdc2 and cyclin B1 | 7 |
| FOXM1 | FOXM1 promotes tumorigenesis by regulating genes associated with cell cycle progression and cell proliferation, and its inhibition in cell lines has been shown to sensitize cells to apoptosis. | 8 |
| MKI67 | MicroRNA-519d targets MKi67 and suppresses cell growth in the hepatocellular carcinoma cell line QGY-7703 | 9 |
| COL11A1 | COL11A1 promotes tumor progression and predicts poor clinical outcome in ovarian cancer | 10 |
| RRM2 | Overexpression of RRM2 decreases thrombspondin-1 and increases VEGF production in human cancer cells in vitro and in vivo: implication of RRM2 in angiogenesis. | 11 |
| SPTBN2 |  |  |
| ANLN | ANLN plays a critical role in human lung carcinogenesis through the activation of RHOA and by involvement in the phosphoinositide 3-kinase/AKT pathway. | 12 |
| TMPRSS4 | TMPRSS4 correlates with colorectal cancer pathological stage and regulates cell proliferation and self-renewal ability. | 13 |
| CDC20 | APC(Cdc20) suppresses apoptosis through targeting Bim for ubiquitination and destruction. | 14 |
| IQGAP3 | IQGAP3 regulates cell proliferation through the Ras/ERK signalling cascade. | 15 |
| CDH3 | P-cadherin functional role is dependent on E-cadherin cellular context: a proof of concept using the breast cancer model. | 16 |
| TK1 | Thymidine kinase 1 and thymidine phosphorylase expression in non-small-cell lung carcinoma in relation to angiogenesis and proliferation. | 17 |
| KIF4A | Overexpression of chromokinesin KIF4 inhibits proliferation of human gastric carcinoma cells both in vitro and in vivo.cellular proliferation of KIF4A knockdown cells decreased significantly (P < 0.05) compared with control cells. | 18,19 |
| PYCR1 |  |  |
| PLK1 | Polo-like kinase 1 (PLK1) inhibition suppresses cell growth and enhances radiation sensitivity in medulloblastoma cells. | 20 |
| NUSAP1 | NUSAP1 influences the DNA damage response by controlling BRCA1 protein levels. | 21 |
| BIRC5 | BIRC5 proteins inhibit apoptosis and play an essential role in tumorigenesis, makings surviving an attractive target for anticancer therapy. | 22 |
| HS6ST2 | Silencing of hHS6ST2 inhibits progression of pancreatic cancer through inhibition of Notch signalling. | 23 |
| CTHRC1 | Aberrant expression of CTHRC1 is widely present in human solid cancers and seems to be associated with cancer tissue invasion and metastasis. | 24 |
| KIF2C | Depletion of either of these kinesins impairs the ability of cells transformed with mutant K-Ras to migrate and invade matrigel | 25 |
| CCNB1 | Chk1-induced CCNB1 overexpression promotes cell proliferation and tumor growth in human colorectal cancer. | 26 |
| PROM2 | Prominin-2 expression increases protrusions, decreases caveolae and inhibits Cdc42 dependent fluid phase endocytosis. | 27 |
| PRC1 | knockdown of either MPHOSPH1 or PRC1 expression with specific small interfering RNAs caused a significant increase of multinuclear cells and subsequent cell death of bladder cancer cells | 28 |
| KIF20A | The silencing of KIF20A inhibited cell viability and induced G2/M arrest, similar to the effects of genistein treatment in gastric cance | 29 |
| ASPM | ASPM inhibition by siRNA-mediated knockdown inhibits tumor cell proliferation and neural stem cell proliferation. | 30 |
| CDK1 | CDK1 promotes cell proliferation and survival via phosphorylation and inhibition of FOXO1 transcription factor. | 31 |
| NEK2 | Overexpressing *NEK2* in cancer cells resulted in enhanced chromosomal instability, cell proliferation and drug resistance. | 32 |
| CDCA5 | Transactivation of CDCA5 and its phosphorylation at Ser209 by ERK play an important role in lung cancer proliferation. | 33 |
| MELK | MELK promotes cell migration and invasion via the FAK/Paxillin pathway, and plays an important role in the occurrence and development of gastric cancer. | 34 |
| CCNB2 | menin-mediated repression of cyclin B2 is crucial for inhibiting G(2)/M transition and cell proliferation through a previously unrecognized molecular mechanism for menin-induced suppression of MEN1 tumorigenesis | 35 |
| BUB1 | Bub1 has oncogenic properties and overexpressed Bub1 drives aneuploidization and tumorigenesis. | 36 |
| PKMYT1 | The kinase activity of MYT1 was high during checkpoint activation and reduced during checkpoint recovery. | 37 |
| CEP55 | Ectopic overexpression of CEP55 enhanced the cell proliferation, colony formation, and tumourigenicity of GC cells. | 38 |
| KIFC1 | KIFC1 is essential for bipolar spindle formation and genomic stability in the primary human fibroblast IMR-90 cell. | 39 |
| SPAG5 | SPAG5 downregulation inhibited cell proliferation and growth significantly by G2/M arrest and induction of apoptosis, and hindered cell migration and invasion. | 40 |
| UHRF1 | UHRF1 overexpression is a mechanism underlying DNA hypomethylation in cancer cells and that senescence is a primary means of restricting tumorigenesis due to epigenetic disruption.UHRF1 depletion upregulated the expression of PML and triggered extrinsic and intrinsic apoptotic pathways by promoting the expression of FasL/FADD, bax, cytosolic cytochrome c, cleaved caspase-8, -9 and -3 and cleaved PRAP and by suppressing bcl-2 expression in GBC-SD and NOZ cells | 41,42 |
| TROAP | trophinin promotes invasion through a mechanism involving HMGB1/RAG | 43 |
| ETV4 | Overexpression of *ETV4* is oncogenic in prostate cells through promotion of both cell proliferation and epithelial to mesenchymal transition.ETV4 promotes metastasis in prostate tumors that have activation of PI3-kinase and Ras signaling. | 44,45 |
| TMEM132A | Knockdown of transmembrane protein 132A by RNA interference facilitates serum starvation-induced cell death in Neuro2a cells. TMEM132A is an important factor of cell survival in regulating certain ER stress-related gene expression in neuronal cells. | 46 |
| HJURP | the overexpression of HJURP (GALHJURP) caused chromosome loss in a wild-type yeast strain, and overexpression of HJURP led to mitotic defects in human cells. | 47 |
| DLGAP5 | Silencing of DLGAP5 by siRNA Significantly Inhibits the Proliferation and Invasion of Hepatocellular Carcinoma Cells. | 48 |
| MMP1 | Identification of MMP-1 as a putative breast cancer predictive marker by global gene expression analysis. | 49 |
| TUBB3 | TUBB3 was a strong predictive marker in recurrent and metastatic gastric cancer patients receiving taxane-based first-line palliative chemotherapy. | 50 |
| CDC6 | Aberrant expression of Cdc6 is oncogenic by directly repressing the INK4/ARF locus through the RD(INK4/ARF) element. | 51 |
| ASF1B | Asf1b, the necessary Asf1 isoform for proliferation, is predictive of outcome in breast cancer. | 52 |
| BUB1B | Loss of BubR1 acetylation causes defects in spindle assembly checkpoint signaling and promotes tumor formation. | 53 |
| NCAPG(CAPG) | CapG inhibition strongly reduces breast cancer metastasis. | 54 |
| FANCI | anconi anemia pathway in DNA repair and maintenance of genome stability | 55 |
| CST1 |  CST1 upregulation might be involved in colorectal tumorigenesis and acts by neutralizing the inhibition of CTSB proteolytic activity by CST3. | 56 |
| KIF18B | A complex of Kif18b and MCAK promotes microtubule depolymerization and is negatively regulated by Aurora kinases. | 57 |
| ECT2 | Abnormality of the ECT2 gene occurs at a relatively early stage of lung adenocarcinogenesis and would be applicable as a new biomarker for prognostication of patients with lung adenocarcinoma. | 58 |
| PTTG1 | PTTG1 promotes the proliferation of prostate cancer cells via the inhibition of SMAD3. | 59 |
| PAQR4 |  |  |
| S100A2 | loss of S100A2 attenuates the transcription of TGF-β/Smad3 target genes involved in tumor promotion. | 60 |
| ZWINT | ZW10 interacting protein (ZWINT) was a known component of the kinetochore complex required for the mitotic spindle checkpoint. | 61 |
| AURKA | The AURKA oncogene is associated with abnormal chromosome segregation and aneuploidy and predisposition to cancer. AURKA promotes STAT3 activity through regulating the expression and phosphorylation levels of JAK2 in human gastric and esophageal cancers. | 62,63 |
| CDC45 | Cdc45 expression is tightly associated with proliferating cell populations and Cdc45 seems to be a promising candidate for a novel proliferation marker in cancer cell biology. | 64 |
| CCNA2 | Loss of Cdk2 and cyclin A2 impairs cell proliferation and tumorigenesis. | 65 |
| RECQL4 | Recurrent RECQL4 Imbalance and Increased Gene Expression Levels Are Associated with Structural Chromosomal Instability in Sporadic Osteosarcoma. | 66,67 |
| LAD1 |  |  |
| CDCA8 | Overexpression of CDCA8 and AURKB was significantly associated with poor prognosis of lung cancer patients. | 68 |
| APOC1 | Apolipoprotein C-1 maintains cell survival by preventing from apoptosis in pancreatic cancer cells | 69 |
| KIF11 | KIF11 is critical for proper spindle assembly and represents an attractive anticancer target. | 70 |
| EPN3 | upregulation of the EPN3 gene is specifically associated with invasive, aggressive cancers. | 71 |
| NUF2(CDCA1) | siRNA-mediated knockdown against CDCA1 and KNTC2, both frequently overexpressed in colorectal and gastric cancers, suppresses cell proliferation and induces apoptosis. | 72 |
| IGSF9 |  |  |
| AURKB | AURKB gene is involved in cell division and mitosis, playing a relevant role in chromosomal segregation and condensation, mitotic checkpoint and cytokinesis. | 73 |
| MCM2 |  The level of MCM2 expression can be used in the differential diagnosis of adenoid cystic carcinoma and polymorphous low grade adenocarcinoma.. | 74 |
| PAFAH1B3 | Metabolic Profiling Reveals PAFAH1B3 as a Critical Driver of Breast Cancer Pathogenicity. | 75 |
| TYMS | ATO has potent in vitro and in vivo activity in lung adenocarcinoma, and is partially mediated by transcriptional downregulation of TYMS. | 76 |
| HMGB3 | High mobility group-box 3 overexpression is associated with poor prognosis of resected gastric adenocarcinoma. | 77 |
| CDT1 | Oncogenic potential of the DNA replication licensing protein CDT1. | 78 |
| PSAT1 | Overexpression of phosphoserine aminotransferase PSAT1 stimulates cell growth and increases chemoresistance of colon cancer cells. | 79 |
| SAPCD2 |  |  |
| TACC3 | TACC3 as a driver of tumorigenesis as well as an inducer of oncogenic EMT and highlight its overexpression as a potential therapeutic target for preventing EMT-associated tumor progression and invasion. | 80 |
| MMP13 | MMP13 is an important regulator of the tumor microenvironment and metastasis. | 81 |
| KIAA0101 | upregulated KIAA0101 expression is associated with esophageal cancer progression, resistance to chemotherapy, and poor survival of the patients. | 82 |
| TRIP13 | Mouse TRIP13/PCH2 is required for recombination and normal higher-order chromosome structure during meiosis. | 83 |
| ESM1 | Over-expression of the Endocan gene in endothelial cells from hepatocellular carcinoma is associated with angiogenesis and tumour invasion. ESM-1 silencing decreased cell survival, migration, and invasion and modulated cell cycle progression in hepatocellular carcinoma. | 84,85 |
| GJB2 | ASPN and GJB2 are implicated in the mechanisms of invasion of ductal breast carcinomas. | 86 |
| TNS4 | TNS4 was frequently overexpressed in gastric cancer, and tumors with high TNS4 mRNA expression showed biologically aggressive behavior. High TNS4 mRNA expression may be a novel prognostic predictor for those patients. | 87 |
| PITX1 | Identification of *PITX1* as a *TERT* Suppressor Gene Located on Human Chromosome 5.A Genetic Screen Identifies PITX1 as a Suppressor of RAS Activity and Tumorigenicity. | 88,89 |
| SIM2 | SIM2-s expression has been associated with aggressive histopathology in prostate cancer. | 90 |
| DTL | The functional interaction between FBXO11 and CDT2 is evolutionary conserved from worms to humans and plays an important role in regulating the timing of cell-cycle exit. | 91 |
| UBE2T | Ubiquitination and downregulation of BRCA1 by ubiquitin-conjugating enzyme E2T overexpression in human breast cancer cells.UBE2T was significantly upregulated in lung cancer tissue and cell lines. | 92,93 |
| STRA6 | To use retinoids to upregulate Stra6, and thus enhance the tumour suppressor functions of p53. Overexpression of the retinoic acid-responsive gene Stra6 in human cancers and its synergistic induction by Wnt-1 and retinoic acid. | 94,95 |
| KIF23 | Considering the strongly supporting function of KIF23 in cytokinesis, its p53-dependent repression may contribute to the prevention of uncontrolled cell growth.Downregulation of KIF23 decreases proliferation of glioma cells. |  96,97 |
| NCAPH |  |  |
| E2F1 | a novel modulator E2F1 was identified as regulating MDM2 expression dependent on SNP309 and further mediates cyclin D1 expression and tumor cell proliferation.. | 98 |
| COMP | COMP expression is restricted to a fibroblast differentiation state not identical to myofibroblasts which is induced by TGFβ and biomechanical forces. | 99 |
| TTK | TTK/hMPS1 is an attractive therapeutic target for triple-negative breast cancer. | 100 |
| ESRP1 | Snail Represses the Splicing Regulator ESRP1 to Promote Epithelial-Mesenchymal Transition.ESRP1 regulates the expression pattern of FGFR-2 isoforms, attenuates cell growth, migration, invasion and metastasis, and is a favorable prognostic factor in pancreatic ductal adenocarcinoma | 101,102 |
| PVRL4 | Nectin-4 is a new histological and serological tumor associated marker for breast cancer. | 103 |
| CDKN2A | Downregulation of CDKN2A and suppression of cyclin D1 gene expressions in malignant gliomas. | 104 |
| TFAP2A | Ganglioside GM3 inhibits the growth of several cancer cells and induces cell cycle arrest by regulating cellular signal pathways. the TFAP2A is required for the ganglioside GM3-stimulated transcriptional regulation. | 105 |
| C1QTNF6 | C1qTNF6 is overexpressed and possibly contributes to tumor angiogenesis by activating the Akt pathway in many hepatocellular carcinomas. | 106 |
| PRAME | Elevated PRAME expression associates with clinicopathologic markers of poor outcome in head and neck squamous cell carcinoma. | 107 |
| TRIB3 | Abnormal expression of TRIB3 in colorectal cancer: a novel marker for prognosis.TRIB3 protein is a stable protein which levels are predominantly regulated by translational control of TRIB3 mRNA transcript in breast cancer. | 108,109 |
| RAB25 | Rab25 is a tumor suppressor gene with antiangiogenic and anti-invasive activities in esophageal squamous cell carcinoma. | 110 |
| GRHL2 | Grhl2 determines the epithelial phenotype of breast cancers and promotes tumor progression. | 111 |
| KLK6 | KLK6 is significantly upregulated and secreted in gastric cancer tissues and sera. | 112 |
| EZH2 | Polycomb protein EZH2-mediated gene silencing is implicated in breast tumorigenesis through methylation of histone H3 on Lysine 27 (H3K27). EZH2 oncogenic activity in castration-resistant prostate cancer cells is Polycomb-independent. | 113,114 |
| SPP1 | SPP1 polymorphisms associated with HBV clearance and hepatocellular carcinoma(HCC) occurrence. | 115 |
| COL17A1 | Collagen XVII is expressed in malignant but not in benign melanocytic tumors and it can mediate antibody induced melanoma apoptosis. | 116 |
| LMNB1 | knockdown of lamin B1 significantly attenuated the proliferation, invasion, and tumorigenicity of pancreatic cancer cells. Lamin B1 depletion in senescent cells triggers large-scale changes in gene expression and the chromatin landscape. | 117,118 |
| MS4A15 |  |  |
| GTSE1 | The cell cycle-regulated protein human GTSE-1 controls DNA damage-induced apoptosis by affecting p53 function. | 119 |
| AHNAK2 |  |  |
| STC2 | STC2 is upregulated in hepatocellular carcinoma and promotes cell proliferation and migration in vitro. | 120 |
| SLC2A1 | inhibition of GLUT1 activity and expression can sensitize Cal27 cells to cisplatin treatment in both normoxic and hypoxic conditions | 121 |
| TRIM29 | TRIM29 functions as a tumor suppressor in nontumorigenic breast cells and invasive ER+ breast cancer.TRIM29 negatively regulates p53 via inhibition of Tip60,TRIM29 functions as an oncogene that promotes tumor growth. | 122,123 |
| NDC80 | Ndc80 complex has conserved roles in kinetochore assembly, chromosome congression, and spindle checkpoint signaling. Hec1/Ndc80 is overexpressed in human gastric cancer and regulates cell growth. | 124–126 |
| NXPH4 | Enhancing potency of neopterin((NPH4)) toward B-16 melanoma cell damage induced by UV-A irradiation and its possible application for skin tumor treatment. | 127 |
| NME1 | Increased expression of the NME1 gene is associated with metastasis in epithelial ovarian cancer.NME1 suppression promotes growth, adhesion and implantation of endometrial stromal cells via Akt and MAPK/Erk1/2 signal pathways in the endometriotic milieu. | 128,129 |
| SYT7 |  |  |
| PBK | TOPK/PBK promotes cell migration via modulation of the PI3K/PTEN/AKT pathway and is associated with poor prognosis in lung cancer. | 130 |
| ATAD2 | ANCCA/ATAD2 overexpression identifies breast cancer patients with poor prognosis, acting to drive proliferation and survival of triple-negative cells through control of B-Myb and EZH2. | 131 |
| CDCA2 | Overexpression of CDCA2 Correlated with Prevention of G1 Phase Arrest and Apoptosis. | 132 |
| KIF14 | KIF14 is modulators of response to docetaxel and potential therapeutic targets in triple negative breast cancer.KIF14 promotes AKT phosphorylation and contributes to chemoresistance in triple-negative breast cancer. | 133,134 |
| RACGAP1 | RacGAP1 expression at the invasive front in gastric cancer was significantly correlated with factors reflecting tumor progression and poor prognosis. | 135 |
| EXO1 | Exo1 has a modest tumor suppressor function. | 136 |
| PRR15 | the expression of Prr15/PRR15 in mouse and human GI tumors is linked, directly or indirectly, to the absence of the APC protein or, more generally, to the disruption of the Wnt signaling pathway. | 137 |
| HMMR | HMMR silencing suppresses GSC-derived tumor growth and extends the survival of mice bearing GSC xenografts. Conversely, HMMR overexpression promotes GSC self-renewal and intracranial tumor propagation | 138 |
| NDUFA4L2 |  |  |
| CALML3 | ALML3 is a useful marker for normal and benign hyperplastic epidermal development, whereas the loss of nuclear CALML3 indicates progression to a proliferative and potentially malignant phenotype. | 139 |
| SUSD4 | Sushi domain-containing protein 4 (SUSD4) inhibits complement by disrupting the formation of the classical C3 convertase. | 140 |
| DEPDC1 | Suppression of DEPDC1 expression with small-interfering RNA significantly inhibited growth of bladder cancer cells | 141 |
| MMP9 | Inflammation Induced by MMP-9 Enhances Tumor Regression of Experimental Breast Cancer. | 142 |
| GINS1 | PSF1, a DNA replication factor expressed widely in stem and progenitor cells, drives tumorigenic and metastatic properties. | 143 |
| CDCA3 | Overexpression of cell cycle regulator CDCA3 promotes oral cancer progression by enhancing cell proliferation with prevention of G1 phase arrest. | 144 |
| FAT2 | FAT2 is involved in tumor suppression and planar cell polarity.Knockdown of Fat2 by siRNA inhibits the migration of human squamous carcinoma cells. | 145,146 |
| TP63 | Overexpression of a truncated form of p63 (DeltaNp63) may counteract growth suppression induced by full length p63. | 147 |
| UBE2S | UBE2S elongates ubiquitin chains on APC/C substrates to promote mitotic exit. E2-EPF knockdown also increases the chemosensitivity to topoisomerase I inhibitor (topotecan) and II (etoposide and doxorubicin). Our results suggest that E2-EPF is associated with the growth and aggressivity of cervical tumor cells | 148,149 |
| KPNA2 | siRNA-mediated KPNA2 knockdown in the human endometrial cancer cell line MFE-296 | 150 |
| HILPDA | over-expression of HIG2 promoted tumor growth by suppressing apoptosis in a mouse orthotopic mode | 151 |
| CENPU |  |  |
| SLC7A5 | By suppressing the expression of LAT-1 in MKN-45 cells, the cell cycle was arrested in G0/G1 phase, and the ability of cell proliferation was significantly decreased in vitro. Moreover, the cell migration and invasion of MKN-45 cells was significantly impaired by knocking down LAT-1 | 152 |
| EGLN3 | Hypoxia-inducible factor (HIF)-independent expression mechanism and novel function of HIF prolyl hydroxylase-3 in renal cell carcinoma. | 153 |
| SERPINB5 | SERPINB5 can be used in gene therapy against breast tumor growth and metastasis. | 154 |
| MCM10 | Knockdown of human MCM10 activates G2 checkpoint pathway. | 155 |
| MCM4 | A dominantly acting murine allele of Mcm4 causes chromosomal abnormalities and promotes tumorigenesis. | 156 |
| MAD2L1 | Genetic variants in MAD1L1 and MAD2L1 confer susceptibility to lung cancer, which might result from reduced spindle checkpoint function due to attenuated function of MAD1L1 and/or MAD2L1.Low MAD2 expression levels associate with reduced progression-free survival in patients with high-grade serous epithelial ovarian cancer. | 157,158 |
| FAM111B |  |  |
| COL7A1 | Type VII collagen(COL7A1) regulates expression of OATP1B3, promotes front-to-rear polarity and increases structural organisation in 3D spheroid cultures of RDEB tumour keratinocytes | 159 |
| FEN1 | An evolutionarily conserved synthetic lethal interaction network identifies FEN1 as a broad-spectrum target for anticancer therapeutic development. | 160 |
| RCC1 | the overexpression of RCC1, the guanine nucleotide exchange factor for Ran, induced steeper mitotic RanGTP gradients in HFF-1 cells, showing the critical role of RCC1 levels in the regulation of mitosis by Ran | 161 |
| MFAP2 | Genome-wide association and large-scale follow up identifies 16 new loci influencing lung function. | 162 |
| CKS2 | Because many activated oncoproteins trigger a DNA damage checkpoint response, which serves as a barrier to proliferation and clonal expansion, Cks protein overexpression likely constitutes one mechanism whereby premalignant cells can circumvent this DNA damage response barrier, conferring a proliferative advantage under stress conditions, and therefore contributing to tumor development. | 163 |
| COL23A1 | Collagen XXIII: a potential biomarker for the detection of primary and recurrent non-small cell lung cancer. | 164 |

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**Table S7. Literature support for the downregulated genes in the top 500 DEGs**

|  |  |  |
| --- | --- | --- |
| Name | Note | Ref. |
| ADH1B |  |  |
| CHRDL1 |  |  |
| ABCA8 |  |  |
| SCARA5 | SCARA5 can contribute to HCC tumorigenesis and metastasis via activation of the FAK signaling pathway. | 1 |
| CA4 |  |  |
| FAM107A | DRR1 is a potent growth suppressor of NSCLC, acting through apoptosis pathway in vivo and it may be a potential therapeutic gene for human lung cancer. | 2 |
| CLEC3B |  |  |
| LYVE1 | LYVE-1 plays an important role in lymphangiogenesis, invasion and metastasis. | 3 |
| SFRP1 | Down-regulation of SFRP1 as a putative tumor suppressor gene can contribute to human hepatocellular carcinoma | 4 |
| MAMDC2 |  |  |
| CLDN8 |  |  |
| SCNN1B |  |  |
| TNXB |  |  |
| TCF21 | TCF21 is known to regulate mesenchymal cell transition into epithelial cells, a property that has been shown to be deficient in carcinomas. | 5 |
| SDPR |  |  |
| HSPB6 | HSPB6 suppresses the growth of HCC cells via the MAPKs and AKT signaling pathways. HspB6 exhibited tumor promotion through increasing tumor angiogenesis, tumor metastasis and inhibiting tumor cell apoptosis | 6,7 |
| GCOM1 |  |  |
| GPM6A |  |  |
| OGN |  |  |
| GPC3 | GPC3 involved in the control of organ growth, is frequently inactivated in a subset of ovarian cancers and suggest that it may function as a tumor suppressor in the ovary. | 8 |
| GPD1 |  |  |
| FIGF | Vascular endothelial growth factor-D promotes growth, lymphangiogenesis and lymphatic metastasis in gallbladder cancer. | 9 |
| CD300LG |  |  |
| DPT |  |  |
| MUC15 | MUC15 is upregulated in colorectal tumors and its expression enhances the oncogenic potential of colon cancer cells. | 10 |
| SCNN1G |  |  |
| PI16 |  |  |
| AQP2 | AQP2 mediates E(2)-enhanced migration, invasion, and adhesion through alteration of F-actin and annexin-2 expression and reorganization of F-actin in endometrial carcinoma. | 11 |
| C7 |  |  |
| CCL14 | CCL14 is a critical mediator of the JARID1B/LSD1/NuRD complex in regulation of angiogenesis and metastasis in breast cancer. | 12 |
| ANGPTL1 | ANGPTL1 represses lung cancer cell motility by abrogating the expression of the EMT mediator SLUG. | 13 |
| FABP4 | FABP4 deficiency substantially impaired metastatic tumor growth in mice, indicating that FABP4 has a key role in ovarian cancer metastasis. | 14 |
| CLIC5 |  |  |
| DUSP9 | Decreased expression of dual-specificity phosphatase 9 is associated with poor prognosis in clear cell renal cell carcinoma. | 15 |
| FMO2 | Downregulation of FMO2 in these patients could thus represent an individual disability to react to extrinsic toxins via FMO2 activation resulting in an earlier progression of oral cancer. | 16 |
| TEK | Tie2 signaling in glioma cells that regulates the cross-talk between glioma cells and tumor microenvironment, envisioning Tie2 as a multi-compartmental target for glioma therapy. | 17 |
| MMRN1 |  |  |
| FXYD1 |  |  |
| PGM5 |  |  |
| ABI3BP | Re-expression of ABI3BP suppresses Thyroid tumor growth by promoting senescence and inhibiting invasion | 18 |
| LMOD1 |  |  |
| EMCN |  |  |
| FHL1 | The LIM domain protein FHL1C interacts with tight junction protein ZO-1 contributing to the epithelial-mesenchymal transition (EMT) of a breast adenocarcinoma cell line. | 19 |
| NPR1 | NPRA promotes PCa development in part by regulating MIF in prostate cancer | 20 |
| SEMA3G | SEMA3G inhibited tumor cell migration and invasion. | 21 |
| ITIH5 | Promoter hypermethylation of the tumor-suppressor genes ITIH5, DKK3, and RASSF1A as novel biomarkers for blood-based breast cancer screening | 22 |
| HLF | Hepatic leukemia factor promotes resistance to cell death in human cancer. | 23 |
| FXYD4 |  |  |
| CFD |  |  |
| NR3C2 |  |  |
| MYOC | myocilin promotes cell proliferation and resistance to apoptosis via the ERK1/2 MAPK signaling pathway. | 24 |
| BTNL9 |  |  |
| GPIHBP1 |  |  |
| TMEM100 | TMEM100 inhibited colony formation of lung cancer cell lines transfected to overexpress the genes. | 25 |
| IGSF10 |  |  |
| TGFBR3 | TGFBR3 co-downregulated with GATA3 is associated with methylation of the GATA3 gene in bladder urothelial carcinoma. | 26 |
| EDNRB | EDNRB promoter hypermethylation might downregulate its gene expression in CRC, and thus played an important role in the development of CRC. | 27 |
| KIAA0408 |  |  |
| ANK2 | Inhibition of ankyrin-B expression reduces growth and invasion of human pancreatic ductal adenocarcinoma. | 28 |
| INMT |  |  |
| ATP1A2 |  |  |
| PDK4 | PDK4 overexpression decreases PDH flux, de novo lipogenesis, and cell proliferation. | 29 |
| C16orf89 |  |  |
| C2orf40 | C2ORF40 suppresses breast cancer cell proliferation and invasion through modulating expression of M phase cell cycle genes. | 30 |
| DES |  |  |
| CLDN19 |  |  |
| CHL1 | overexpression of CHL1 suppresses proliferation and invasion in MDA-MB-231 cells and knockdown of CHL1 expression results in increased proliferation and invasion in MCF7 cells in vitro. | 31 |
| FAM189A2 |  |  |
| TMPRSS2 | In prostate cancer cells, TMPRSS2 expression was increased and the protein mislocalized over the entire tumor cell membrane. | 32 |
| HSPB7 | Downregulation of the tumor suppressor HSPB7, involved in the p53 pathway, in renal cell carcinoma. | 33 |
| UMOD | Uromodulin and Tamm-Horsfall protein induce human monocytes to secrete TNF and express tissue factor. | 34 |
| HBB | Decreased expression of haemoglobin beta (HBB) gene in anaplastic thyroid cancer and recovery of its expression inhibits cell growth. | 35 |
| RHCG | RhCG is downregulated in oesophageal squamous cell carcinomas, but expressed in multiple squamous epithelia. | 36 |
| PDE2A |  |  |
| PLA2G4F |  |  |
| HBA1 |  |  |
| SVEP1 | Regulation of SVEP1 gene expression by 17β-estradiol and TNFα in pre-osteoblastic and mammary adenocarcinoma cells. | 37 |
| TMEM213 |  |  |
| KNG1 |  |  |
| ADH1C |  |  |
| TSPAN7 |   |  |
| CPED1 |  |  |
| MT1H | Metallothionein 1 h tumour suppressor activity in prostate cancer is mediated by euchromatin methyltransferase 1. | 38 |
| PIK3C2G |  |  |
| FAXDC2 |  |  |
| ITM2A |  |  |
| IL33 | Alarmin IL-33 acts as an immunoadjuvant to enhance antigen-specific tumor immunity. | 39 |
| LDB2 | LIM cofactors CLIM and RLIM regulate the biological activity of ERalpha during the development of human breast cancer. | 40 |
| SCN7A | enhanced expression of SCN7A/Nax channel within distinct subpopulation of DRG neurons contributes to bone cancer pain by increasing the excitability of these neurons. | 41 |
| NDNF |  |  |
| LIFR | cancer-specific methylation and a specific decrease of LIFR expression are a common inactivation event in colon cancer development. | 42 |
| AOX1 | hepatocellular carcinomas showed either a complete loss or reduced expression of AOX1 | 43 |
| ATP6V0A4 | The renal v-ATPase a4 subunit is expressed in specific subtypes of human gliomas. | 44 |
| GGT6 |  |  |
| MFAP4 |  |  |
| KCNJ10 | alterations in expression of Kir4.1 occurring in epilepsy-associated lesions are possibly influenced by the local inflammatory environment and in particular by the inflammatory cytokine IL-1β. | 45 |
| KCNJ1 |  |  |
| DNASE1L3 | Correlation between decreased sensitivity of the Daudi lymphoma cells to VP-16-induced apoptosis and deficiency in DNAS1L3 expression. | 46 |
| LPL | Lipoprotein lipase is frequently overexpressed or translocated in cervical squamous cell carcinoma and promotes invasiveness through the non-catalytic C terminus. | 47 |
| LEPR | Leptin triggers LEPR-positive cancer stem cell differentiation, thereby promoting tumor cell survival.  | 48 |
| CD36 | Silencing expression of CD36 can result in the inhibition of L-TGF-β1 activation in a rat silicosis model, thus further preventing the development of silica-induced lung fibrosis. | 49 |
| PPP1R1A |  |  |
| LIMS2 | PINCH-2 mRNA is overexpressed in malignant mesothelioma compared with carcinomas involving serosal cavities. | 50 |
| ALDH1A2 | The retinoic acid synthesis gene ALDH1a2 is a candidate tumor suppressor in prostate cancer. | 51 |
| TMEM132C |  |  |
| ATOH8 | Novel tumor suppressor gene ATOH8 inhibits chemoresistance in HCC and reduces the cancer stem cell Potential. | 52 |
| COL4A6 | The expression of type IV collagen alpha6 chain is related to the prognosis in patients with esophageal squamous cell carcinoma. | 53 |
| MME | CD10 expression is enhanced by Twist1 and associated with poor prognosis in esophageal squamous cell carcinoma. | 54 |
| SLC4A1 |  |  |
| DPP6 |  |  |
| KIT | Cytokines secreted by bone marrow stromal cells protect c-KIT mutant AML cells from c-KIT inhibitor-induced apoptosis. | 55 |
| GSTM5 |  |  |
| CLCNKB |  |  |
| ACACB |  |  |
| SLC12A1 | Integrated genomic profiling identifies candidate genes implicated in glioma-genesis and a novel LEO1-SLC12A1 fusion gene | 56 |
| SCN4B |  |  |
| ELF5 | The Ets transcription factor ELF5 functions as a tumor suppressor in the kidney.ELF5 suppresses estrogen sensitivity and underpins the acquisition of antiestrogen resistance in luminal breast cancer. | 57,58 |
| PLSCR4 |  |  |
| SLC6A4 | SLC6A4 Variations Are Associated with Poor Survival in Colorectal Cancer Patients | 59 |
| CPAMD8 |  |  |
| HBA2 |  |  |
| HRG | HRG can activate p38 MAPK to enhance VEGF transcription via an upstream HRG response element, leading to increased VEGF secretion and angiogenic response in breast cancer cells. | 60 |
| CRHBP | cc-RCC is characterized by a significant loss of CRHBP mRNA expression that furthermore is associated with a more aggressive state of tumors. | 61 |
| DMD | Dystrophin is a tumor suppressor in human cancers with myogenic programs. | 62 |
| MT1G | MT1G appears to be functional tumor suppressor involved in thyroid carcinogenesis mainly through modulating the phosphatidylinositol-3-kinase (PI3K)/Akt pathway and partially through regulating the activity of Rb/E2F pathway. | 63 |
| WIF1 | WIF1 can effectively co-regulate pro-apoptotic activity through the combination with DKK1. | 69 |
| TNNC1 |  |  |
| SEMA6D | Semaphorin 6D regulates the late phase of CD4+ T cell primary immune responses. | 64 |
| PCOLCE2 |  |  |
| CALB1 | Suppression of calbindin D28K in estrogen-induced hamster renal tumors. | 65 |
| FREM1 | The extracellular matrix gene Frem1 is essential for the normal adhesion of the embryonic epidermis. | 66 |
| SLC9A4 |  |  |
| SLC19A3 | Down-regulation of thiamine transporter THTR2 gene expression in breast cancer and its association with resistance to apoptosis. | 67 |
| SOD3 | SOD3 decreases ischemic injury derived apoptosis through phosphorylation of Erk1/2, Akt, and FoxO3a. | 68 |
| F11 |  |  |
| SOSTDC1 | SOSTDC1 differentially modulates Smad and beta-catenin activation and is down-regulated in breast cancer. | 69 |
| SERPINA5 |  SERPINA5 inhibits tumor cell migration by modulating the fibronectin-integrin β1 signaling pathway in hepatocellular carcinoma. | 70 |
| GDF10 | Stem cell antigen-1 enhances tumorigenicity by disruption of growth differentiation factor-10 (GDF10)-dependent TGF-beta signaling. | 71 |
| ACKR1 |  |  |
| ABCA9 |  |  |
| ERBB4 | ERBB4 Promoter Polymorphism Is Associated with Poor Distant Disease-Free Survival in High-Risk Early Breast Cancer. | 72 |
| FCN3 | Ficolin-2 and ficolin-3 in women with malignant and benign ovarian tumours | 73 |
| RBP4 | Induction of retinol-binding protein 4 and placenta-specific 8 expression in human prostate cancer cells remaining in bone following osteolytic tumor growth inhibition by osteoprotegerin. | 74 |
| MASP1 |  |  |
| TFAP2B | TFAP2B as a mediator of the survival function of PAX3/FKHR in aggressive childhood cancer alveolar rhabdomyosarcoma (aRMS); TFAP2B overexpression contributes to tumor growth and a poor prognosis of human lung adenocarcinoma through modulation of ERK and VEGF/PEDF signaling. | 75,76 |
| NTRK2 | Cooperation of tyrosine kinase receptor TrkB and epidermal growth factor receptor signaling enhances migration and dispersal of lung tumor cells. | 77 |
| SRPX | down-regulation of drs mRNA is closely correlated with carcinomas which arise from adenomatous polyps in the course of the adenoma-carcinoma sequence, but that most carcinomas arising de novo are independent of the tumor suppressor function of the drs gene. | 78 |
| S1PR1 | Host endothelial S1PR1 regulation of vascular permeability modulates tumor growth. | 79 |
| PID1 | PID1 (NYGGF4), a New Growth-Inhibitory Gene in Embryonal Brain Tumors and Gliomas. | 80 |
| CASR | Calcium-sensing receptor silencing in colorectal cancer is associated with promoter hypermethylation and loss of acetylation on histone 3. | 81 |
| CLDN5 | Claudin-5 is involved in breast cancer cell motility through the N-WASP and ROCK signalling pathways. | 82 |
| MFSD4 |  |  |
| PLAC9 |  |  |
| GPR133 |  |  |
| AOC3 | Vascular adhesion protein 1 mediates binding of immunotherapeutic effector cells to tumor endothelium. | 83 |
| FBLN5 | Fibulin-5 is down-regulated in urothelial carcinoma of bladder and acts as a tumor suppressor gene by inhibiting proliferation and invasion of bladder cancer cells. | 84 |
| SLC4A4 |  |  |
| TSPAN8 | TM4SF3 promotes esophageal carcinoma metastasis via upregulating ADAM12m expression. | 85 |
| ROBO4 | Robo4 stabilizes the vascular network by inhibiting pathologic angiogenesis and endothelial hyperpermeability. | 86 |
| CLDN16 | The gene up-expression of both CLDN16 and HAPLN3 was suggested to be involved in the development of breast cancer and to be a biomarker and target treatment for breast cancer. | 87 |
| GIMAP8 | GIMAP8 mRNA level was abnormally elevated in the adjacent nontumor tissues as compared to that in the control lung tissues. | 88 |
| SYNPO2 |  |  |
| CCL21 | Intrapulmonary Administration of CCL21 Gene-Modified Dendritic Cells Reduces Tumor Burden in Spontaneous Murine Bronchoalveolar Cell Carcinoma | 89 |
| PTPN21 | PTPD1 supports receptor stability and mitogenic signaling in bladder cancer cells. | 90 |
| SLC13A2 |  |  |
| MAPK4 | Regulation of MAPK-activated protein kinase 5 activity and subcellular localization by the atypical MAPK ERK4/MAPK4. | 91 |
| SYNM | aberrant promoter methylation of the Synemin gene is associated with early tumor relapse. | 92 |
| CNTN1 | The expression of CNTN-1 is upregulated in the oesophageal squamous cell carcinoma tissue and related to stage, lymph node metastasis and lymphatic invasion. | 93 |
| HSD17B6 | Estrogen receptor β and 17β-hydroxysteroid dehydrogenase type 6, a growth regulatory pathway that is lost in prostate cancer. | 94 |
| ATP6V0D2 |  |  |
| LRRK2 | Leucine-rich repeat kinase 2 regulates tau phosphorylation through direct activation of glycogen synthase kinase-3β. | 95 |
| COL6A6 |  |  |
| PLA2R1 | PLA2R1 activates the kinase JAK2 and orients its activity towards a tumor suppressive one. PLA2R1 also promotes accumulation of reactive oxygen species which induce cell death and senescence. | 96 |
| HMGCS2 | Ketogenic HMGCS2 Is a c-Myc Target Gene Expressed in Differentiated Cells of Human Colonic Epithelium and Down-Regulated in Colon Cancer | 97 |
| CYYR1 | Sequence, "subtle" alternative splicing and expression of the CYYR1 (cysteine/tyrosine-rich 1) mRNA in human neuroendocrine tumors | 98 |
| ACPP | Avian prostatic Acid phosphatase: estrogen regulation in the oviduct and epithelial cell-derived ovarian carcinomas. | 99 |
| GYPC | A high GYPC gene expression is associated with an unfavorable outcome in childhood ALL. | 3 |
| C1QTNF7 |  |  |
| ARHGEF15 | Arhgef15 promotes retinal angiogenesis by mediating VEGF-induced Cdc42 activation and potentiating RhoJ inactivation in endothelial cells. | 100 |
| PAMR1 |  |  |
| RELN | Reelin is involved in transforming growth factor-β1-induced cell migration in esophageal carcinoma cells. | 101 |
| SLC9A3 | NHE3 can act as a direction sensor for cells and that NHE3 phosphorylation in persistent directional cell migration does not involve PI3K/Akt during electrotaxis. | 102 |
| CXCL12 | The CXCL12/CXCR4 axis is involved in tumor progression, angiogenesis, metastasis, and survival. | 103 |
| LMO3 | High expression of LMO3 contributes to the development and aggressiveness of neuroblastoma. LMO3 Interacts with Neuronal Transcription Factor, HEN2, and Acts as an Oncogene in Neuroblastoma. Oncogenic LMO3 collaborates with HEN2 to enhance neuroblastoma cell growth through transactivation of Mash1. | 104,105 |
| SORBS1 |  |  |
| SLIT3 | Epigenetic inactivation of SLIT3 and SLIT1 genes in human cancers. | 106 |
| ID4 | Aberrant hypermethylation of ID4 gene promoter region increases risk of lymph node metastasis in T1 breast cancer. ID4 is a potential oncogene in a small subset of bladder cancers. | 107 |
| EGF | EGF receptor uses SOS1 to drive constitutive activation of NFκB in cancer cells. | 108 |
| ANGPT1 | Angpt1 is needed as a vascular stabilizing factor that organizes and limits the angiogenesis response and protects from pathological consequences, such as tissue fibrosis. | 109 |
| FOXI1 |  |  |
| MCEMP1 |  |  |
| VTCN1 | B7-H4 enhances oncogenicity and inhibits apoptosis in pancreatic cancer cells. | 110 |
| FGF1 | A dominant-negative FGF1 mutant (the R50E mutant) suppresses tumorigenesis and angiogenesis. | 111 |
| PRELP | A proline/arginine-rich end leucine-rich repeat protein (PRELP) variant is uniquely expressed in chronic lymphocytic leukemia cells. | 112 |
| VIPR1 |  |  |
| PEG3 | The imprinted gene PEG3 inhibits Wnt signaling and regulates glioma growth. | 113 |
| FAM167A |  |  |
| VSIG2 |  |  |
| AQP7 |  |  |
| PDGFRA | Novel oncogenic PDGFRA mutations in pediatric high-grade gliomas. | 114 |
| CLCNKA |  |  |
| CGNL1 |  |  |
| CCDC69 | CCDC69 acts as a scaffold to regulate the recruitment of midzone components and the assembly of central spindles. | 115 |
| ZBTB16 | Hypermethylation reduces expression of tumor-suppressor PLZF and regulates proliferation and apoptosis in non-small-cell lung cancers. | 116 |
| ADAMTS8 | The metalloprotease ADAMTS8 displays antitumor properties through antagonizing EGFR-MEK-ERK signaling and is silenced in carcinomas by CpG methylation. | 117 |
| CLDN10 | Expression of CLDN1 and CLDN10 in lung adenocarcinoma in situ and invasive lepidic predominant adenocarcinoma. | 118 |
| CRTAC1 |  |  |
| PTGDS | PGD2 signals acting through PTGDR in suppression of intestinal tumors. | 119 |
| CNN1 | Loss of smooth muscle calponin results in impaired blood vessel maturation in the tumor-host microenvironment. | 120 |
| CES1 | hCE1 is a good candidate for further validation as a serologic glycoprotein biomarker for HCC. | 121 |
| IRX2 | Knockdown of IRX2 inhibits osteosarcoma cell proliferation and invasion by the AKT/MMP9 signaling pathway. | 122 |
| FOSB | Stress effects on FOSB and interleukin-8 (IL8) driven ovarian cancer growth and metastasis | 123 |
| TFCP2L1 |  |  |
| CXorf36 | DIA1 and DIA1R gene products regulate molecular traffic through the cellular secretory pathway or affect the function of secreted factors, and functional deficits cause disorders with ASD-like symptoms and/or mental retardation. | 124 |
| PRDM16 | PRDM16 promoters are methylated and their expression is suppressed in lung cancer cells. | 125 |
| MAOB | Smoking induces long-lasting effects through a monoamine-oxidase epigenetic regulation. | 126 |
| JAM2 | Cooperative expression of junctional adhesion molecule-C and -B supports growth and invasion of glioma. | 127 |
| HSPB8 | Restored expression of the atypical heat shock protein H11/HspB8 inhibits the growth of genetically diverse melanoma tumors through activation of novel TAK1-dependent death pathways | 128 |
| PTPRB | Recurrent PTPRB and PLCG1 mutations in angiosarcoma. | 129 |
| FGF2 | Fibroblast growth factor 2 promotes tumor progression in an autochthonous mouse model of prostate cancer. | 130 |
| SLC12A3 |  |  |
| MYCT1 | Promoter hypermethylation-induced transcriptional down-regulation of the gene MYCT1 in laryngeal squamous cell carcinoma. | 131 |
| LGI3 | LGI3 stimulates HaCaT cell migration following β-catenin accumulation through the Akt pathway. | 132 |
| RTKN2 |  |  |
| RANBP3L |  |  |
| PEBP4 | overexpression of PEBP4 reduced the sensitivity of A549 cells to DDP-induced cytotoxicity, mainly through the altered expression of the p53 protein or the modulation of miR-34a. | 133 |
| PROS1 | PROS1 is elevated in high grade and castrateresistant prostate cancer, and could serve as a potential biomarker of aggressive disease. | 134 |
| MATN2 | Matn2 functions as a tumor suppressor in hepatocarcinogenesis, and in this process activation of EGFR together with that of Erk1/2, as well as inactivation of GSK-3β, play strategic roles. | 135 |
| KLHL13 |  |  |
| DMRT2 |  |  |
| C14orf180 |  |  |
| NELL1 | Higher NRP1 expression levels are associated with lymph node metastasis and poor prognosis in OSCC patients. | 136 |
| HPGD | 15-PGDH is reduced and induces apoptosis and cell cycle arrest in gastric carcinoma. | 137 |
| SERTM1 |  |  |
| FOLR1 |  |  |
| ADH1A | The role of the alcohol dehydrogenase-1 (ADH1) gene in the pathomechanism of uterine leiomyoma. | 138 |
| ATP6V1B1 |  |  |
| MARCO |  |  |
| AKAP2 |  |  |
| ERG | An Integrated Network of Androgen Receptor, Polycomb, and TMPRSS2-ERG Gene Fusions in Prostate Cancer Progression | 139 |
| CXCL14 | Re-expression of CXCL14, a common target for epigenetic silencing in lung cancer, induces tumor necrosis. | 140 |
| CDO1 | Cysteine dioxygenase 1 is a tumor suppressor gene silenced by promoter methylation in multiple human cancers. | 141 |
| LRRC2 |  |  |
| MT1F | Exogenous MT1F expression increased RKO cell apoptosis and inhibited RKO cell migration, invasion and adhesion as well as in vivo tumorigenicity. | 142 |
| ADRB2 | ADRB2 inhibition confers cell invasion and transforms benign prostate epithelial cells, whereas ADRB2 overexpression counteracts EZH2-mediated oncogenesis. | 143 |
| MTURN | C7ORF41 knockdown in mouse fetal liver cells impaired megakaryocyte differentiation. | 144 |
| MT1M | Metallothionein MT1M is a tumor suppressor of human hepatocellular carcinomas | 145 |
| HEPACAM2 |  |  |
| VEPH1 |  |  |
| SLC26A7 |  |  |
| SHROOM4 |  |  |
| TCEAL2 |  |  |
| STX11 |  |  |
| IGFBP6 | Identification of IGFBP-6 as an effector of the tumor suppressor activity of SEMA3B. | 146 |
| L1CAM | L1CAM stimulates glioma cell motility and proliferation through the fibroblast growth factor receptor. | 147 |
| PKHD1L1 |  |  |
| IRX1 | Homeobox gene IRX1 is a tumor suppressor gene in gastric carcinoma. | 148 |
| WNK4 |  |  |
| DAAM2 |  |  |
| WASF3 | WASF3 regulates miR-200 inactivation by ZEB1 through suppression of KISS1 leading to increased invasiveness in breast cancer cells. | 149 |
| SHE |  |  |
| RASL11B |  |  |
| PCK1 |  |  |
| CWH43 |  |  |
| PTGIS | Overexpression of PTGIS could predict liver metastasis and is correlated with poor prognosis in colon cancer patients. | 150 |
| ACADL |  |  |
| NPHS2 |  |  |
| XPNPEP2 |  |  |
| MSRB3 |  |  |
| MRGPRF |  |  |
| GNG11 |  |  |
| EDN3 | Endothelin-3 is produced by metastatic melanoma cells and promotes melanoma cell survival. | 151 |
| SEMA6A | Semaphorin 6A inhibits the cell migration in lung adenocarcinoma cells | 152 |
| CAV2 | Regulation of cancer cell proliferation by caveolin-2 down-regulation and re-expression. | 153 |
| GPR110 | Orphan receptor GPR110, an oncogene overexpressed in lung and prostate cancer. | 154 |
| CYP4B1 |  |  |
| SLC1A1 |  |  |
| SELP |  |  |
| PRX | Inactivation of a peroxiredoxin by hydrogen peroxide is critical for thioredoxin-mediated repair of oxidized proteins and cell survival. | 155 |
| PDZD2 | Pin1 modulates p63α protein stability in regulation of cell survival, proliferation and tumor formation. | 156 |
| SLC22A3 | Suppressing the expression of NUDT11, SLC22A3, and HNF1B influences cellular phenotypes associated with tumor-related properties in prostate cancer cells. | 157 |
| PLP1 |  |  |
| CRYAB | Tumor suppressor Alpha B-crystallin (CRYAB) associates with the cadherin/catenin adherens junction and impairs NPC progression-associated properties | 158 |
| ADAMTS5 | Forced expression of ADAMTS-5 in glioma cell lines stimulated cell invasion. | 159 |
| EHF | re-expression of ESE-3 in prostate cancer cells inhibited clonogenic survival and induced apoptotic cell death. | 160 |
| GIMAP6 |  |  |
| GHR | human metastatic melanoma tumors express GHR and cell lines possess active GHRs that can modulate multiple signaling pathways and alter cell proliferation. | 161 |
| ANGPTL7 | CDT6, also known as AngX has been described to inhibit tumour growth in a human melanoma growing in nude mice. | 162 |
| C14orf132 |  |  |
| SLIT2 | Axon guidance factor SLIT2 inhibits neural invasion and metastasis in pancreatic cancer. | 163 |
| SYNE1 | Actomyosin tension exerted on the nucleus through nesprin-1 connections influences endothelial cell adhesion, migration, and cyclic strain-induced reorientation. | 164 |
| CLEC14A | Clec14a is specifically expressed in endothelial cells and mediates cell to cell adhesion. | 165 |
| ADAMTSL4 | Cathepsin B and its interacting proteins, bikunin and TSRC1, correlate with TNF-induced apoptosis of ovarian cancer cells OV-90. | 166 |
| FAM3B | Knockdown of FAM3B triggers cell apoptosis through p53-dependent pathway. | 167 |
| GPR146 |  |  |
| MYH11 | CBFbeta-SMMHC slows cell cycle progression from G1 to S phase by inhibiting CBF DNA binding and transactivation. | 168 |
| MMRN2 | MMRN2 as a crucial player in the regulation of EC function, neo-angiogenesis and hence tumor growth. | 169 |
| AQP6 |  |  |
| TMEM45B |  |  |
| SAMD5 |  |  |
| CXCL2 | MIP-2A is a novel target of an anilinoquinazoline derivative for inhibition of tumour cell proliferation. | 170 |
| ANXA3 | Annexin A3 is associated with a poor prognosis in breast cancer and participates in the modulation of apoptosis in vitro by affecting the Bcl-2/Bax balance. | 171 |
| KCNK3 |  |  |
| RAMP2 | Ectopic expression of RAMP2 inhibited lung cancer cell growth and caused apoptotic cell death. Knockdown of RAMP2 by RNA interference stimulated cell proliferation. | 172 |
| PPARG | Up-regulated PPARγ gene expression could inhibit endometrial cancer cell migration, invasion and proliferation abilities, and down-regulated PPARγ gene expression could promote endometrial cancer cell migration, invasion and proliferation abilities. | 173 |
| PALMD |  |  |
| NRK |  |  |
| AKR1C2 |  |  |
| ABCG2 | ABCG2 expressing SP cells show autophagy associated cell survival and may be a potent target for developing more effective treatment in bladder carcinoma to enhance patient survival, Increased ABCG2 mRNA expression time driven by cisplatin is associated with survival of gastric cancer patients, and this may help modify the therapeutic strategies. | 174,175 |
| TMEM47 | Use of integrative epigenetic and cytogenetic analyses to identify novel tumor-suppressor genes in malignant melanoma. | 176 |
| CACNA2D2 | CACNA2D2 is a putative tumor suppressor gene located in the human chromosome 3p21.3 region that shows frequent allelic imbalances in lung, breast, and other cancers. | 177,178 |
| PTH1R | Type 1 receptor parathyroid hormone (PTH1R) influences breast cancer cell proliferation and apoptosis induced by high levels of glucose. | 179 |
| PPARGC1A |  |  |
| DENND2A |  |  |
| SH3BGRL2 |  |  |
| HHIP | Knockdown of HHIP gene in stromal cells increased their supporting activity although control cells marginally supported SMO(+) leukemic cell proliferation. | 180 |
| GPRASP1 |  |  |
| CBX7 | CBX7 knockdown resulted in TRAIL-induced apoptosis in the OCCA cells. | 181 |
| CCBE1 | CCBE1 is a potential therapeutic tool for the modulation of lymphangiogenesis and angiogenesis in a variety of diseases that involve the lymphatic system, such as lymphedema or lymphatic metastasis. | 182 |
| CFL2 |  |  |
| KLF2 | The forced-expression of KLF2 led to the downregulation of CXCR4 mRNA and impaired CXCR4 promoter activity, which associated with the chemotherapeutic agents in oral cancer cells.1  | 183 |
| AQP4 | siRNA-mediated down regulation of AQP4 induced glioblastoma cell apoptosis in vitro and in vivo. | 184 |
| ABCA6 |  |  |
| PLCL1 |  |  |
| KLK7 | Kallikrein 7 enhances pancreatic cancer cell invasion by shedding E-cadherin. | 185 |
| RDH5 |  |  |
| PDE5A | In melanoma cells oncogenic BRAF induces invasion through downregulation of PDE5A. | 186 |
| SPRY2 | SPRY2 knockdown also significantly reduced extracellular signal-regulated kinase (ERK) phosphorylation, EGFR expression, and EGFR recycling. Sprouty2 but not Sprouty4 is a potent inhibitor of cell proliferation and migration of osteosarcoma cells.  | 187,188 |
| CFTR | interaction between CFTR and AF-6/afadin that is involved in the pathogenesis of colon cancer and indicated the potential of the two as novel markers of metastasis and prognostic predictors for human colon cancer. | 189 |
| RNF150 |  |  |
| FGL2 | FGL2 contributes to HCC tumour growth and angiogenesis in a thrombin-dependent manner, and downregulation of its expression might be of therapeutic significance in HCC | 190 |
| GRK5 | GRK5 knockdown inhibited Ser339 phosphorylation of CXCR4, increased cell surface localization of CXCR4 and promoted the growth of medulloblastoma cells with low WIP1 expression. | 191,192 |
| MGAT3 | high levels of MGAT3, galectin-4, -8, -10, -13 and -14 transcripts correlate with better relapse-free survival in human breast cancer. | 193 |
| FAT4 | FAT1 and FAT4 suppress tumor growth via activation of Hippo signaling. | 194 |
| ACTG2 |  |  |
| F8 |  |  |
| SLC2A4 |  |  |
| THRB | TRβ could act as a tumor suppressor in breast tumorigenesis | 195 |
| WISP2 | WISP2 acts as an activator of CTL-induced killing and suggests that the loss of its function promotes evasion of immunosurveillance and the ensuing progression of the tumor. | 196 |
| ANKRD29 |  |  |
| LIPH | high serum level of LIPH was correlated with better survival in early phase lung cancer patients after surgery | 197 |
| TMEM52B |  |  |
| ADIPOQ |  |  |
| RAMP3 | RAMP3, ISOC1 and GPRC5C potentially regulate the growth or migration of MCF-7 cells. | 198,199 |

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