

**Supplementary Tables**

**Table 1: The significant changes of EIF4A3 mRNA expression in cancers**

<b>Cancer</b>	<b>Cancer subtype</b>	<b>P-value</b>	<b>Fold change</b>	<b>Rank (%)</b>	<b>Sample</b>
Bladder Cancer	Superficial Bladder Cancer	7.17E-14	2.066	6	76
Brain and CNS Cancer	Atypical Teratoid/Rhabdoid Tumor	5.00E-3	3.901	6	9
	Malignant Glioma Anaplastic Oligoastrocytoma	2.30E-2	2.353	8	14
	Invasive Ductal Breast Carcinoma	2.00E-2	2.337	6	10
Breast Cancer	Breast Carcinoma	1.06E-10	2.127	2	39
Head and Neck Cancer	Oral Cavity Carcinoma	1.85E-6	2.541	1	26
	Floor of the Mouth Carcinoma	4.71E-6	2.847	3	27
	Oropharyngeal Carcinoma	9.69E-5	2.043	4	28
	Tongue Carcinoma	4.12E-5	2.152	7	37
	Tongue Squamous Cell Carcinoma	3.41E-12	2.116	2	59
Kidney Cancer	Tongue Squamous Cell Carcinoma	2.50E-11	2.605	2	57
	Renal Wilms Tumor	6.00E-3	2.274	9	9
Leukemia	Chronic Lymphocytic Leukemia	1.32E-9	-2.148	3	59
	B-Cell Childhood Acute Lymphoblastic Leukemia	5.35E-4	-4.127	7	242
	T-Cell Childhood Acute Lymphoblastic Leukemia	4.52E-4	-3.575	9	50
	Squamous Cell Lung Carcinoma	1.41E-11	2.058	2	62
Lung Cancer	Small Cell Lung Carcinoma	2.00E-3	2.602	3	10
	Large Cell Lung Carcinoma	5.00E-3	2.104	6	10
	Squamous Cell Lung Carcinoma	2.00E-3	2.335	9	19
Lymphoma	Anaplastic Large	8.32E-4	3.097	10	46

Pancreatic Cancer	Cell Lymphoma, ALK-Positive Pancreatic Ductal Adenocarcinoma	1.27E-4	2.044	2	14
Prostate Cancer	Prostatic Intraepithelial Neoplasia Epithelia	5.76E-4	2.785	6	34
	Prostate Carcinoma Epithelia	4.37E-4	2.289	7	52

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**Table 2: The association of EIF4A3 expression and the prognosis value in cancer patients**

<b>CANCER TYPE</b>	<b>N</b>	<b>ENDPOINT</b>	<b>HR</b>	<b>CORRECTED P-VALUE</b>	<b>DATASET</b>	<b>PROBE ID</b>
<b>Bladder cancer</b>	165	Disease Specific Survival	0.99	9.48E-04	GSE13507	ILMN_1667043
	165	Overall Survival	0.46	2.55E-03	GSE13507	ILMN_1667043
<b>Blood cancer</b>	559	Disease Specific Survival	1.13	3.24E-04	GSE2658	201303_at
<b>Brain cancer</b>	50	Overall Survival	0.35	1.69E-02	MGH-glioma	38031_at
<b>Breast cancer</b>	200	Distant Metastasis Free Survival	0.80	3.06E-03	GSE11121	201303_at
	249	Disease Free Survival	0.65	6.02E-03	GSE4922-GPL96	201303_at
	158	Overall Survival	0.23	2.31E-02	GSE3143	38031_at
<b>Lung cancer</b>	204	Relapse Free Survival	1.70	5.48E-04	GSE31210	201303_at
	204	Overall Survival	1.74	2.03E-03	GSE31210	201303_at
	104	Overall Survival	1.10	1.01E-02	jacob-00182-MSK	201303_at
	129	Overall Survival	0.78	1.97E-02	GSE4573	201303_at
<b>Soft tissue cancer</b>	140	Distant Recurrence Free Survival	1.50	6.78E-03	GSE30929	201303_at

**Table 3: The alteration frequency and type of EIF4A3 in cancer study.**

<b>Cancer</b>	<b>Dataset</b>	<b>N</b>	<b>Alteration Frequency (%)</b>	<b>TYPE (% N)</b>			
				<b>Amplification</b>	<b>Deep Deletion</b>	<b>Mutation</b>	<b>Multiple Alterations</b>
<b>Neuroendocrine Prostate Cancer(NEPC)</b>	Trento/Cornell/ Broad 2016	107	20.56	20.56(22)	0	0	0
<b>Breast Cancer</b>	The MBC Project	103	15.53	10.68(11)	3.88(4)	0(0)	0.97(1)
<b>Pancreatic Cancer</b>	UTSW	109	10.09	7.34(8)	2.75(3)	0	0
<b>Liver</b>	TCGA	366	7.1	6.28(23)	0.27(1)	0.55(2)	0
<b>Ovarian</b>	TCGA	316	6.96	6.33(20)	0.32(1)	0.32(1)	0
<b>CCLE</b>	Novartis/Broad 2012	995	6.23	5.93(59)	0.3(3)	0	0
<b>Breast Cancer</b>	TCGA	963	6.23	5.71(55)	0.42(4)	0	0.1(1)
<b>Melanoma</b>	TCGA	287	5.92	4.88(14)	0	1.05(3)	0
<b>Breast Cancer</b>	METABRIC	2051	5.75	5.75(118)	0	0	0

**Table 4: The alteration frequency and type of EIF4A3 in cancer type.**

Cancer	N	Alteration Frequency (%)	TYPE (% N)			
			Amplificati on	Deep Deletion	Mutation	Multiple Alterations
<b>Prostate Cancer, NOS</b>	65	18.46	18.46(12)	0	0	0
<b>Cancer of Unknown Primary</b>	1181	5.25	5(59)	0.25(3)	0	0
<b>Breast Cancer</b>	4966	4.23	4.01(199)	0.08(4)	0.1(5)	0.04(2)
<b>Ovarian Cancer</b>	551	3.99	3.63(20)	0.18(1)	0.18(1)	0
<b>Melanoma</b>	1140	2.02	1.58(18)	0	0.44(5)	0
<b>Hepatobiliary Cancer</b>	1398	2	1.72(24)	0.07(1)	0.21(3)	0
<b>Adrenocortical Carcinoma</b>	114	1.75	1.75(2)	0	0	0
<b>Endometrial Cancer</b>	538	1.67	1.12(6)	0	0.56(3)	0
<b>Soft Tissue Sarcoma</b>	932	1.5	1.39(13)	0	0.11(1)	0
<b>Pheochromocytoma</b>	140	1.43	1.43(2)	0	0	0
<b>Mesothelioma</b>	211	1.42	1.42(2)	0	0	0
<b>Cervical Cancer</b>	241	1.24	0.41(1)	0.41(1)	0.41(1)	0
<b>Bladder Cancer</b>	1046	1.15	0.48(5)	0.1(1)	0.57(6)	0

**Table 5: The co-expression partners of EIF4A3.**

<b>Gene</b>	<b>Co-expression partners</b>
<b>EIF4A3</b>	HEXIM1, TUBB4B, IFRD1, NXF1, KLHL21, NDRG1, SLC16A1, EIF5, GADD45B, ENC1, PGK1, CDKN1A, RAN, PNP, SRSF2, HPSE, KPNA2, ENO1, XRCC6, TGM1, DNAJA1, IL36G, SLC25A44, PFDN2, IL36RN, SERPINB13, ALYREF, ILF2, SNRNP25, GLA, HNRNPAB, SLC5A1, PDZK1IP1, KDM6B, SPTLC2, SUMO2, PHB, CCT7, SLC20A1, ARL6IP1, UHRF1, PSMA3, MRPL18, PLBD1, PPIF, SOD2, GSPT1, UBE2S, POLR2L, AURKA, ISCA1, NAMPT, KIF20A, MRPL15, HSPA2, RFC2, SLC38A2, MPZL2, ACAD9, NDUFS3, PPP2CA, IPO7, PSMB1, ABCA12, RFC4, PLAUR, UAP1, PSMB5, MAT2A, PRDX1, ZNF331, NR4A3, SLC2A3, HIGD1A, TUBB6, C20orf24, MPHOSPH6, KLK13, YWHAQ, CYB5D1, ATP1B3, POLR3K, AHSA1, C6orf120, GABPB1, SUSDB, KLHL15, TCN1, PSMA5, ASF1B, EIF2S1, CCNH, S100A12, SIVA1, USP39, CREM, CCT3, SERTAD1, ALOX12B, NOLC1, C1QBP, CHST7, CYB5R3, PRMT5, OAT, NOP56, HSP90AB1, TIMELESS, NOD2, ZC3H12A, CARHSP1, AGO2, NFATC1, RLIM, ARC, CH25H, TOB2, PSMB6, TMEM11, PPRC1, FABP5, SKP2, MRPS23, GDPD3, H2AFX, TAGLN2, MYC, GCLM, PSMD14, PPP2R1B, RRS1, UFD1L, PSMB2, MRPL11, GM2A, MCM10, ADRM1, LCN2, TUBB2A, MRPS7, DDX1, TMSB10, IDH3A, IL6, SPSB1, NR4A1, RAC1, CD24, FAM83B, SLC41A1, POLE, DHX15, TIPARP, MXD1, XRCC5, MRPL17, NELFCD, TSC22D2, LRRC59, PIM1, POLE2, CYCS, WDR1, UBR7, NDUFC1, HNRNPC, NHP2, PTTG1, H2AFX, HSP90AA1, PPP1CA, NFKBID, PCNA, LLPH, MMP19, MAFF, NOP10, MT2A, ELAVL1, COX8A, SRP68, FAM98A, HIRIP3, CHD1, TUBG1, TMEM165, HAT1, SOD1, RPP30, PSMD11, NFIL3, ATP5J2, TFDP1, GSTO1, CSE1L, DNTTIP2, HSPE1, HSPA9, CDK16, MAP2K3, FOXK2, HTATSF1, LMNA, CLCA2, EIF3J, TMEM70, VOPP1, FEN1, RPF2, MAPKAPK2, CCT5, CLCF1, TREX2, HRAS, SLIRP, ECHS1, EFTUD2, MYBL2, EXOSC2, NDUFV2, YWHAH, TXNDC17, SOCS3, NME1, ARPC2, ABL2, RRP36, AIMP2, UCHL3, SLC1A5, RAB38, RAE1, LBHD1, CENPO, C18orf8, HMOX2, C8orf33, NSDHL, NUP85, CNFN, UCK2, ETF1, PFKFB3, VBP1, PPP1R15B, VPS37B, RPA3, KLK10, VDAC3, SPR, SLC25A5, ARID5A, C10orf99, PREP, EXOSC5, TNFRSF10D, LSM3, ADSL, CDC123, BAG3, VDAC2, HSPD1, LITAF, GTPBP4, ANAPC11, AKR1B10, FOSL1, MDH2, TRIB1, CD55, DNAJC9, PARP1, SYNCRIP, TPI1, C11orf96, TUBB3, MAD2L1, UQCRQ, CLDN1, UBE2A, TEAD4, MRPL3, RIOK1, PSMB3, KARS, SIRT1, SRSF3, PDLIM4, CGA, ADM, SERPINB1, CIRH1A, PSME3, ESF1, CDCA4, ACP1, ATP1B1, TOB1, LDHA, DDX23, ANXA7, NHP2L1, HSPA4, TRIP13, GNL2, PSMD1, TIMM23, EIF5B, CDK1, RUVBL2, LSM4, TIMM17A

**Table 6: The enrichment of include neoplasm MeSH terms among the EIF4A3 co-expression network (TOP 5).**

Rank	MeSH heading	GEO Series	links	Co-expressed Genes	Score*
1	Precursor Cell Lymphoblastic Leukemia-Lymphoma	GSE653 GSE2351 GSE650 GSE657 GSE3911 GSE34670 GSE11877 GSE13425 GSE649 GSE658 GSE635 GSE13351 GSE655 GSE659 GSE654 GSE643 GSE648 GSE2842 GSE17195	47	HEXIM1、 TUBB4B IFRD1、 NXF1 KLHL21、 NDRG1 SLC16A1、 EIF5 GADD45B、 ENC1 CDKN1A、 PNP SLC20A1、 ARL6IP1 SOD2、 ISCA1 HSPA2、 SLC38A2 IPO7、 GLA SUSD6、 CHST7 OAT、 NOP56 TOB2、 FABP5 DNAJA1、 TUBB2A NR4A1、 H2AFX KDM6B、 PPP1CA SUMO2、 MAP2K3 SLC1A5、 C18orf8 CD55、 TUBB3 UBE2A、 SLC2A3 SIRT1、 ADM NR4A3、 ATP1B1 TOB1、 LDHA TRIP13	217.26
2	Daunorubicin	GSE653 GSE2351 GSE650 GSE657 GSE649 GSE658 GSE635 GSE655 GSE659 GSE654 GSE643 GSE648	39	HEXIM1、 IFRD1 NDRG1、 KLHL21 NXF1、 SLC16A1 TUBB4B、 EIF5 ENC1、 GADD45B CDKN1A、 PNP SOD2、 ISCA1 HSPA2、 IPO7 GLA、 CHST7 OAT、 NOP56 FABP5、 TUBB2A NR4A1、 KDM6B MAP2K3、 SLC1A5 C18orf8、 ARL6IP1 SLC38A2、 CD55 UBE2A、 SLC2A3 SIRT1、 SLC20A1 ADM、 NR4A3 ATP1B1、 TOB1 LDHA	169.95
3	Ovarian Neoplasms	GSE23553 GSE27651	32	ACAD9、 NDUFS3 POLR3K、 SNRNP25	55.75

4	Cisplatin	GSE23553 GSE14209	31	SIVA1, USP39 TIMELESS, TMEM11 MRPS23, PHB H2AFZ, MCM10 MRPS7, MRPL17 NELFCD, POLE2 UBR7, FAM98A UHRF1, VOPP1 FEN1, HRAS SLIRP, ECHS1 EFTUD2, MYBL2 TXNDC17, RRP36 LBHD1, CENPO NUP85, SPR ACAD9, NDUFS3 POLR3K, SNRNP25 SIVA1, USP39 TIMELESS, TMEM11 MCM10, MRPS7 MRPL17, NELFCD POLE2, UBR7 FAM98A, UHRF1 VOPP1, FEN1 HRAS, SLIRP ECHS1, EFTUD2 MYBL2, TXNDC17 RRP36, LBHD1 CENPO, NUP85 UCK2, SPR TEAD4	52.45
5	Breast Neoplasms	GSE10843 GSE39976 GSE10911	22	ASF1B, POLE CDK16, CDCA4 DNAJA1, PSMB2 DDX1, RAC1 XRCC5, LRRC59 SRSF2, ELAVL1 TFDP1, CSE1L MRPL15, RAN C8orf33, MRPL18 AHSA1, SRSF3 PSMD1, TIMM17A	40.14

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**\*The enrichment of MeSH terms among the co-expressions is measured by the summation of *LLS*s from all supportive GSEs that are indexed by the MeSH terms.**