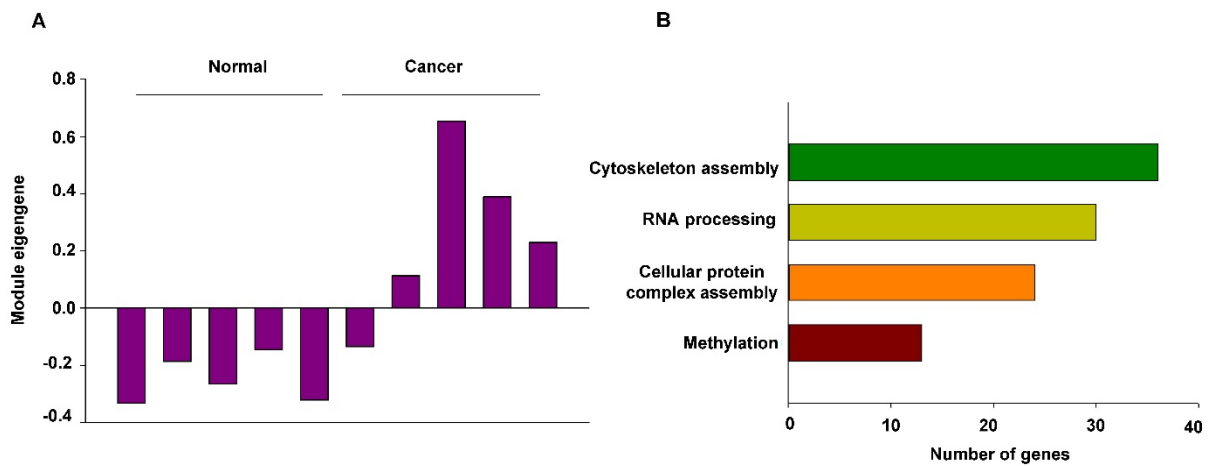


Supplementary Figures

Supplementary Figure 1. Co-expression module (C_M19) associated with human lung cancer. We constructed co-expression networks using publicly available microarray data from both squamous lung cancer biopsy specimens and paired normal specimens from 5 patients. The microarray data (GSE3268) from a previous lung cancer study were downloaded from the GEO database and the normalized microarray data were used to generate gene co-expression networks using WGCNA. **A**, The eigengene values across samples in the C_M19 module were significantly up-regulated in the cancer specimens as compared to normal samples. **B**, The major biological processes (Gene ontology) including cancer development including RNA processing, cellular protein complex assembly and methylation significantly enriched in the genes in the co-expression module



Supplementary Table 1. Correlation coefficients and P-values between co-expression modules and cancer. Correlation analysis was performed using the WGCNA package. Co-expression network analysis was performed using the microarray data from both squamous lung cancer biopsy specimens and paired normal specimens from 5 patients. Of the 61 co-expression modules, C_M19 module which included PRDX6 gene was significantly associated with human squamous lung cancer. P-values <0.05 were considered significant.

Module	R	P-value
C_M1	-0.57	0.08555
C_M2	-0.95	2.04E-05
C_M3	-0.68	0.03176
C_M4	-0.47	0.16882
C_M5	-0.48	0.1648
C_M6	-0.73	0.01554
C_M7	-0.36	0.30346
C_M8	-0.57	0.08335
C_M9	-0.17	0.63232
C_M10	-0.49	0.15204
C_M11	-0.31	0.38387
C_M12	-0.12	0.7408
C_M13	-0.15	0.67392
C_M14	0.35	0.31944
C_M15	0.75	0.01245
C_M16	0.08	0.82861
C_M17	0.10	0.79399
C_M18	0.23	0.52471
C_M19	0.79	0.00657
C_M20	0.68	0.03133
C_M21	0.87	0.00122
C_M22	0.34	0.33965
C_M23	0.14	0.69088
C_M24	0.19	0.58959
C_M25	0.77	0.00966
C_M26	0.31	0.39089
C_M27	0.39	0.26013
C_M28	0.54	0.10682
C_M29	0.41	0.24388
C_M30	0.48	0.16156
C_M31	-0.05	0.88081
C_M32	-0.09	0.81337
C_M33	0.38	0.28401
C_M34	0.31	0.3833
C_M35	0.07	0.84381
C_M36	0.61	0.05945

C_M37	0.09	0.80221
C_M38	-0.50	0.13843
C_M39	-0.40	0.24596
C_M40	-0.44	0.20444
C_M41	-0.86	0.00161
C_M42	-0.17	0.63091
C_M43	-0.23	0.5186
C_M44	-0.23	0.52964
C_M45	0.10	0.78124
C_M46	0.44	0.19993
C_M47	0.47	0.16565
C_M48	-0.11	0.77123
C_M49	0.56	0.09111
C_M50	0.41	0.24315
C_M51	0.08	0.83207
C_M52	-0.37	0.29297
C_M53	-0.03	0.9269
C_M54	0.13	0.72461
C_M55	0.25	0.49349
C_M56	0.67	0.03493
C_M57	0.72	0.01849
C_M58	0.10	0.7812
C_M59	0.34	0.34052
C_M60	0.41	0.23549
C_M61	0.67	0.03248

Supplementary Table 2. Probe ids and gene symbols of C_M19 members which included PRDX6 gene.

200030_s_at(SLC25A3) 200046_at(DAD1) 200654_at(P4HB)
200700_s_at(KDEL2) 200770_s_at(LAMC1) **200844_s_at(PRDX6)**
200854_at(NCOR1) 200868_s_at(RNF114) 200870_at(STRAP)
200918_s_at(SRPR) 200961_at(SEPHS2) 200967_at(PPIB)
200968_s_at(PPIB) 201000_at(AARS) 201067_at(PSMC2)
201090_x_at(TUBA1B) 201131_s_at(CDH1) 201154_x_at(RPL4 /// SNORD16
/// SNORD18A /// SNORD18B /// SNORD18C) 201173_x_at(NUDC)
201236_s_at(BTG2) 201237_at(CAPZA2) 201238_s_at(CAPZA2)
201274_at(PSMA5) 201281_at(ADRM1) 201300_s_at(PRNP)
201379_s_at(TPD52L2) 201386_s_at(DHX15) 201473_at(JUNB)
201481_s_at(PYGB) 201564_s_at(FSCN1) 201736_s_at(MARCH6)
201739_at(SGK1) 201749_at(ECE1) 201771_at(SCAMP3)
201774_s_at(NCAPD2) 201797_s_at(VARS) 201883_s_at(B4GALT1)

201966_at(NDUFS2) 202009_at(TWF2) 202081_at(IER2)
 202114_at(SNX2) 202138_x_at(AIMP2) 202175_at(CHPF)
 202185_at(PLOD3) 202234_s_at(SLC16A1) 202235_at(SLC16A1)
 202248_at(E2F4) 202475_at(TMEM147) 202489_s_at(FXYD3)
 202495_at(TBCC) 202565_s_at(SVIL) 202581_at(HSPA1A /// HSPA1B)
 202623_at(EAPP) 202715_at(CAD) 202755_s_at(GPC1)
 202756_s_at(GPC1) 202821_s_at(LPP) 202852_s_at(AAGAB)
 202891_at(NIT1) 202988_s_at(RGS1) 203005_at(LTBR)
 203109_at(UBE2M) 203190_at(MIR4691 /// MIR7113 /// NDUFS8)
 203199_s_at(MTRR) 203375_s_at(TPP2) 203380_x_at(SRSF5)
 203384_s_at(GOLGA1) 203523_at(LSP1) 203641_s_at(COBL1)
 203720_s_at(ERCC1) 203773_x_at(BLVRA) 203857_s_at(MIR7110 /// PDIA5)
 203869_at(USP46) 204136_at(COL7A1) 204140_at(TPST1)
 204143_s_at(ENOSF1) 204146_at(RAD51AP1) 204208_at(RNGTT)
 204228_at(PPIH) 204274_at(EBAG9) 204298_s_at(LOX)
 204392_at(CAMK1) 204398_s_at(EML2) 204534_at(SEBOX /// VTN)
 204621_s_at(NR4A2) 204622_x_at(NR4A2) 204846_at(CP)
 205020_s_at(ARL4A) 205063_at(GEMIN2) 205085_at(ORC1)
 205102_at(TMPRS2) 205115_s_at(RBM19) 205191_at(RP2)
 205246_at(PEX13) 205249_at(EGR2) 205268_s_at(ADD2)
 205339_at(STIL) 205445_at(PRL) 205451_at(FOXO4)
 205574_x_at(BMP1) 205590_at(RASGRP1) 205625_s_at(CALB1)
 205665_at(TSPAN9) 205677_s_at(DLEU1) 205825_at(PCSK1)
 205857_at(SLC18A2) 205980_s_at(ARHGAP8 /// PRR5-ARHGAP8)
 206028_s_at(MERTK) 206115_at(EGR3) 206218_at(MAGEB2)
 206300_s_at(PTHLH) 206346_at(PRLR) 206359_at(SOCS3)
 206360_s_at(SOCS3) 206493_at(ITGA2B) 206499_s_at(RCC1)
 206562_s_at(CSNK1A1) 206601_s_at(HOXD3 /// HOXD4 /// LOC401021)
 206640_x_at(GAGE12B /// GAGE12C /// GAGE12D /// GAGE12E /// GAGE12F ///
 GAGE12G /// GAGE12H /// GAGE12I /// GAGE2A /// GAGE2C /// GAGE4 /// GAGE5 ///
 GAGE6 /// GAGE7) 206645_s_at(NR0B1) 206695_x_at(ZNF43) 206727_at(C9)
 206746_at(BFSP1) 206786_at(HTN3) 206858_s_at(HOXC6)
 206859_s_at(PAEP) 206932_at(CH25H) 207067_s_at(HDC)
 207086_x_at(GAGE1 /// GAGE12B /// GAGE12C /// GAGE12D /// GAGE12E ///
 GAGE12F /// GAGE12G /// GAGE12H /// GAGE12I /// GAGE12J /// GAGE13 /// GAGE2A ///
 GAGE2C /// GAGE2D /// GAGE2E /// GAGE4 /// GAGE5 /// GAGE6 /// GAGE7 /// GAGE8)
 207137_at(TONSL) 207154_at(DIO3) 207176_s_at(CD80)
 207229_at(KLRAP1) 207261_at(CNGA3) 207305_s_at(TRAPPC8)
 207461_at(NA) 207488_at(NA) 207544_s_at(ADH6)
 207545_s_at(LOC101928143 /// LOC101930388 /// NUMB)
 207552_at(ATP5G2) 207618_s_at(BCS1L) 207640_x_at(NTN3)
 207654_x_at(DR1) 207663_x_at(GAGE3) 207707_s_at(SEC13)
 207739_s_at(GAGE1 /// GAGE12B /// GAGE12C /// GAGE12D /// GAGE12E ///
 GAGE12F /// GAGE12G /// GAGE12H /// GAGE12I /// GAGE12J /// GAGE13 /// GAGE2A ///
 GAGE2B /// GAGE2C /// GAGE2D /// GAGE2E /// GAGE3 /// GAGE4 /// GAGE5 /// GAGE6
 /// GAGE7 /// GAGE8) 207959_s_at(DNAH9) 207989_at(OPRM1)
 208058_s_at(MGAT3) 208103_s_at(ANP32E) 208153_s_at(FAT2)

208155_x_at(GAGE1 /// GAGE12B /// GAGE12C /// GAGE12D /// GAGE12E ///
GAGE12F /// GAGE12G /// GAGE12H /// GAGE12I /// GAGE12J /// GAGE13 /// GAGE2D ///
GAGE4 /// GAGE5 /// GAGE6 /// GAGE7) 208204_s_at(CAV3)
208235_x_at(GAGE12B /// GAGE12F /// GAGE12G /// GAGE12I /// GAGE4 ///
GAGE5 /// GAGE6 /// GAGE7) 208251_at(KCNC4) 208378_x_at(FGF5)
208447_s_at(PRPS1) 208464_at(GRIA4) 208540_x_at(S100A11P1 ///
S100A11P1) 208612_at(PDIA3) 208639_x_at(PDIA6) 208684_at(COPA)
208724_s_at(RAB1A) 208745_at(ATP5L) 208753_s_at(NAP1L1)
208754_s_at(NAP1L1) 208770_s_at(EIF4EBP2) 208843_s_at(GORASP2)
209010_s_at(TRIO) 209068_at(HNRNPDL) 209155_s_at(NT5C2)
209188_x_at(DR1) 209233_at(EMG1) 209270_at(LAMB3)
209282_at(PRKD2) 209408_at(KIF2C) 209440_at(PRPS1)
209461_x_at(WDR18) 209622_at(STK16) 209624_s_at(MCCC2)
209724_s_at(ZBTB14) 209743_s_at(ITCH) 209759_s_at(ECI1)
209820_s_at(TBL3) 209900_s_at(SLC16A1) 209947_at(UBAP2L)
209959_at(NR4A3) 210022_at(PCGF1) 210024_s_at(UBE2E3)
210079_x_at(KCNAB1) 210093_s_at(MAGOH /// MAGOHB)
210355_at(PTHLH) 210379_s_at(TLK1) 210419_at(BARX2)
210421_s_at(SLC24A1) 210460_s_at(PSMD4) 210502_s_at(PPIE)
210546_x_at(CTAG1A /// CTAG1B) 210596_at(MAGT1)
210779_x_at(GEMIN2) 210879_s_at(RAB11FIP5) 210912_x_at(GSTM4)
210941_at(PCDH7) 210985_s_at(SP100) 211060_x_at(GPAA1)
211068_x_at(FAM21C /// LOC101930591) 211072_x_at(TUBA1B)
211114_x_at(GEMIN2) 211115_x_at(GEMIN2) 211124_s_at(KITLG)
211330_s_at(HFE) 211358_s_at(CIZ1) 211609_x_at(PSMD4)
211674_x_at(CTAG1A /// CTAG1B) 211703_s_at(TM2D1)
211710_x_at(RPL4 /// SNORD16 /// SNORD18A /// SNORD18B /// SNORD18C)
211750_x_at(TUBA1C) 211756_at(PTHLH) 211793_s_at(ABI2)
211937_at(EIF4B) 211976_at(NUDT3) 212113_at(ATXN7L3B)
212190_at(SERPINE2) 212313_at(CHMP7) 212363_x_at(ACTB /// ACTG1)
212370_x_at(FAM21A /// FAM21C /// LOC101930591) 212405_s_at(METTTL13)
212418_at(ELF1) 212483_at(NIPBL) 212500_at(ADO)
212639_x_at(TUBA1B) 212664_at(TUBB4A) 212739_s_at(NME4)
212773_s_at(TOMM20) 212777_at(SOS1) 212888_at(DICER1)
212900_at(SEC24A) 213063_at(ZC3H14) 213064_at(ZC3H14)
213124_at(ZNF473) 213150_at(HOXA10) 213189_at(MINA)
213196_at(ZNF629) 213201_s_at(TNNT1) 213227_at(PGRMC2)
213238_at(ATP10D) 213251_at(SMARCA5) 213309_at(PLCL2)
213423_x_at(TUSC3) 213453_x_at(GAPDH) 213521_at(PTPN18)
213526_s_at(LIN37) 213573_at(KPNB1) 213604_at(TCEB3)
213646_x_at(TUBA1B) 213649_at(SRSF7) 213820_s_at(STARD5)
213861_s_at(METTTL21B) 213882_at(TM2D1) 213927_at(MAP3K9)
213937_s_at(FTSJ1) 213989_x_at(SETD4) 214006_s_at(GGCX)
214160_at(0) 214397_at(MBD2) 214411_x_at(CTRB2) 214427_at(NOP2)
214596_at(CHRM3) 214639_s_at(HOXA1) 214796_at(KIAA1456 ///
LOC101927137) 214901_at(ZNF8) 214914_at(FAM13C)
214937_x_at(PCM1) 214969_at(MAP3K9) 214999_s_at(RAB11FIP3)

215174_at(FMO6P) 215263_at(ZXDA /// ZXDB) 215430_at(GK2)
 215463_at(OR7E24) 215468_at(NA) 215491_at(MYCL) 215526_at(NA)
 215533_s_at(UBE4B) 215682_at(LOC440792) 215690_x_at(GPAA1)
 215724_at(PLD1) 215762_at(NA) 215803_at(CXorf57) 215885_at(SSX2B)
 215894_at(PTGDR) 215922_at(REPS1) 216031_x_at(HN1L)
 216248_s_at(NR4A2) 216267_s_at(TMEM115) 216323_x_at(TUBA3C ///
 TUBA3D) 216342_x_at(RPS4XP2 /// RPS4XP2) 216437_at(NA)
 216468_s_at(ZNF682) 216509_x_at(MLLT10) 216550_x_at(ANKRD12)
 216619_at(GTPBP10 /// LOC101927446) 216652_s_at(DR1)
 216934_at(NA) 217010_s_at(CDC25C) 217080_s_at(HOMER2)
 217094_s_at(ITCH) 217104_at(ST20) 217225_x_at(LOC101060373 ///
 NOMO1 /// NOMO2 /// NOMO3) 217409_at(NA) 217419_x_at(AGRN)
 217627_at(ZNF573) 217766_s_at(TMEM50A) 217785_s_at(YKT6)
 217787_s_at(GALNT2) 217788_s_at(GALNT2) 217860_at(NDUFA10)
 217951_s_at(PHF3) 218035_s_at(RBM47) 218070_s_at(GMPPA)
 218073_s_at(NDC1) 218086_at(NPDC1) 218092_s_at(AGFG1)
 218125_s_at(CCDC25) 218142_s_at(CRBN) 218193_s_at(GOLT1B)
 218199_s_at(NOL6) 218200_s_at(NDUFB2) 218220_at(C12orf10)
 218269_at(DROSHA) 218343_s_at(GTF3C3) 218426_s_at(RNF216)
 218437_s_at(LZTFL1) 218470_at(YARS2) 218516_s_at(IMPAD1)
 218616_at(INTS12) 218624_s_at(CENPBD1P1) 218737_at(SBNO1)
 218766_s_at(WARS2) 218788_s_at(SMYD3) 218803_at(CHFR)
 218894_s_at(MAGOHB) 218902_at(NOTCH1) 218942_at(PIP4K2C)
 218961_s_at(PNKP) 218976_at(DNAJC12) 219007_at(NUP43)
 219037_at(RRP15) 219142_at(RASL11B) 219181_at(LIPG)
 219208_at(FBXO11) 219215_s_at(SLC39A4) 219291_at(DTWD1)
 219408_at(PRMT7) 219411_at(ELMO3) 219514_at(ANGPTL2)
 219531_at(CEP72) 219548_at(ZNF16) 219555_s_at(CENPN)
 219582_at(OGFRL1) 219605_at(ZNF3) 219642_s_at(PEX5L)
 219686_at(STK32B) 219854_at(ZNF14) 219961_s_at(KIZ)
 219987_at(ERVMER34-1) 220011_at(AUNIP) 220083_x_at(UCHL5)
 220124_at(GAN) 220152_at(C10orf95) 220261_s_at(ZDHHC4)
 220295_x_at(DEPDC1) 220442_at(GALNT4 /// POC1B-GALNT4)
 220526_s_at(MRPL20) 220550_at(FBXO4) 220580_at(BICC1)
 220635_at(PSORS1C2) 220649_at(AGBL3) 220665_at(LUZP4)
 220713_at(DENND6B) 220840_s_at(C1orf112) 220860_at(PURG)
 221086_s_at(FEZ2) 221121_at(CT55) 221165_s_at(IL22)
 221244_s_at(PDPK1) 221298_s_at(SLC22A8) 221408_x_at(PCDHB12)
 221531_at(WDR61) 221588_x_at(ALDH6A1) 221652_s_at(ASUN)
 221666_s_at(PYCARD) 221687_s_at(MVB12B) 221727_at(SUB1)
 221737_at(GNA12) 221782_at(DNAJC10) 221790_s_at(LDLRAP1)
 221853_s_at(LOC101060373 /// NOMO1 /// NOMO2 /// NOMO3)
 221961_at(CLCN7) 222075_s_at(OAZ3) 222184_at(LINC00965)
 222194_at(FAM66D) 222250_s_at(INTS7) 222281_s_at(C1orf186 ///
 LOC100505650 /// LOC101929219) 222340_at(NA) 32032_at(DGCR14 /// TSSK2)
 34187_at(RBMS2) 38269_at(PRKD2) 38892_at(GLTSCR1L)
 55093_at(CHPF2) 56821_at(SLC38A7)

Supplementary Table 3. Biological processes enriched in the genes in the C_M19 module

GO Term	Count	P Value
GO:0043623~cellular protein complex assembly	24	0.00304
GO:0034622~cellular macromolecular complex assembly	36	0.00417
GO:0007017~microtubule-based process	24	0.00504
GO:0050658~RNA transport	11	0.00715
GO:0050657~nucleic acid transport	11	0.00715
GO:0051016~barbed-end actin filament capping	4	0.00782
GO:0051236~establishment of RNA localization	11	0.00823
GO:0051168~nuclear export	11	0.01031
GO:0044085~cellular component biogenesis	83	0.01065
GO:0006457~protein folding	12	0.0115
GO:0070271~protein complex biogenesis	46	0.0149
GO:0006461~protein complex assembly	46	0.0149
GO:0032272~negative regulation of protein polymerization	6	0.0189
GO:0051028~mRNA transport	9	0.0191
GO:0006418~tRNA aminoacylation for protein translation	5	0.0196
GO:0006621~protein retention in ER lumen	3	0.01977
GO:0071426~ribonucleoprotein complex export from nucleus	8	0.02049
GO:0006396~RNA processing	30	0.02053
GO:0071822~protein complex subunit organization	51	0.02058
GO:0006405~RNA export from nucleus	8	0.02154
GO:0015931~nucleobase-containing compound transport	11	0.022
GO:0065003~macromolecular complex assembly	52	0.02258
GO:0006403~RNA localization	11	0.02364
GO:0000209~protein polyubiquitination	12	0.02369
GO:0035437~maintenance of protein localization in endoplasmic reticulum	3	0.02495
GO:0043039~tRNA aminoacylation	5	0.02541
GO:0043038~amino acid activation	5	0.02541
GO:0071166~ribonucleoprotein complex localization	8	0.0261
GO:0009119~ribonucleoside metabolic process	16	0.02938
GO:0071427~mRNA-containing ribonucleoprotein complex export from nucleus	7	0.03247
GO:0006406~mRNA export from nucleus	7	0.03247
GO:0046128~purine ribonucleoside metabolic process	15	0.03432
GO:0048193~Golgi vesicle transport	14	0.0344
GO:0044248~cellular catabolic process	47	0.03592
GO:0042278~purine nucleoside metabolic process	15	0.036
GO:0032725~positive regulation of granulocyte macrophage colony-stimulating factor production	3	0.03674
GO:0000226~microtubule cytoskeleton organization	16	0.03902
GO:0072595~maintenance of protein localization in organelle	4	0.03926
GO:0002474~antigen processing and presentation of peptide antigen via MHC class I	7	0.03937
GO:0022607~cellular component assembly	72	0.0423

GO:0032645~regulation of granulocyte macrophage colony-stimulating factor production	3	0.04328
GO:0032604~granulocyte macrophage colony-stimulating factor production	3	0.04328
GO:0032259~methylation	13	0.04349
GO:0006511~ubiquitin-dependent protein catabolic process	19	0.04627
GO:0007010~cytoskeleton organization	36	0.04634
GO:0018193~peptidyl-amino acid modification	38	0.04822
GO:0048524~positive regulation of viral process	7	0.0492
GO:0031100~organ regeneration	7	0.0492
