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Landscape of the hnRNP K protein–protein interactome

Supplementary Table 1. List of proteins interacting with hnRNA K protein and identified by both His-K and immunoaffinity procedures.

	gene	NAME	**Molecular Function**	**Cellular Component**	**Biological Process**	**Evidence**
1	Hspa2	70kDa heat shock protein HST70	* chaperone activity * heat shock protein activity * protein binding * ATP binding * unfolded protein binding	* nucleus * mitochondrion	* protein folding * response to unfolded protein * male meiosis * spermatogenesis * spermatid development * response to heat	
2	Actn4	Actn4 protein	* actin binding * structural constituent of cytoskeleton * calcium ion binding	* nucleus * cytoplasm * actin cytoskeleton	* cell motility * actin filament bundle formation	Actn4 is a component of Grb2-SH2 complex PMID: 12577067
3	Hnrpa1	heterogeneous nuclear ribonucleoprotein A1	* nucleic acid binding * RNA binding	* nucleus * nucleoplasm * cytoplasm * ribonucleoprotein complex * heterogeneous nuclear ribonucleoprotein complex	* nuclear mRNA splicing, via spliceosome * mRNA processing * RNA-nucleus export * mRNA-nucleus export * transport	Hnrpa1 is a component of Grb2-SH2 complex PMID: 12577067 Component of the human Nop56p-associated pre-ribosomal ribonucleoprotein complex PMID:12777385
4	Hnrpa2b1	heterogeneous nuclear ribonucleoprotein A2/B1 isoform B1	* nucleic acid binding * RNA binding	* nucleus * nucleoplasm * cytoplasm * ribonucleoprotein complex * heterogeneous nuclear ribonucleoprotein complex	* nuclear mRNA splicing, via spliceosome * mRNA processing * RNA-nucleus export * mRNA-nucleus export * transport	Hnrpa2b1 interacts directly with RBM3. An interaction between hnRNPA2 and RBM3 was demonstrated by yeast two-hybrid assay [PMID: 15518812]. RBM3 interacts directly with hnRNP K. [PMID: 10809782]
5	Lmna	lamin A	* structural molecule activity * protein binding	* nucleus * lamin filament * nuclear lamina * intermediate filament	*muscle development	An interaction between paxillin and LMNA was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412

						Lmna is also component of Grb2-SH2 complex PMID: 12577067 and a component of multiprotein transcriptional coactivator complex which consists of 122 subunits [PMID: 15175163]
6	Hnrpab	nucleic acid binding factor pRM10 similar to heterogeneous nuclear ribonucleoprotein A/B	* nucleic acid binding * DNA binding * RNA binding	* nucleus * ribonucleoprotein complex	* nuclear mRNA splicing, via spliceosome * regulation of transcription, DNA-dependent * RNA processing * mRNA processing	
7	CGI-99	LRRGT00192 similar to CGI-99	*transcription factor activity	*nucleus	*regulation of cell cycle development	Both CGI-99 and hnRNP K interacts with vinculin. An interaction between vinculin and C14orf166 (CGI-99) was demonstrated by co-immunoprecipitation . Vinculin is a component of SIC complex PMID: 15163412
8	Rps28	ribosomal protein S28	* nucleic acid binding * RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu Eukaryota)	* protein biosynthesis	Rps28 is a component of of Grb2-SH2 complex PMID: 12577067
9	Rps5	ribosomal protein S5	* nucleic acid binding * RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu Eukaryota)	* protein biosynthesis	Rps5 is a component of Grb2-SH2 complex PMID: 12577067
10	hnrpd	RNA binding protein p42 AUF1 similar to hnrpd	* nucleic acid binding * DNA binding * RNA binding * mRNA binding * transcriptional activator activity	* chromosome, telomeric region * nucleus * cytoplasm * ribonucleoprotein complex	* nuclear mRNA splicing, via spliceosome * regulation of transcription, DNA-dependent * RNA processing * RNA catabolism	An interaction between AUF1p42 and SAF-B was demonstrated by yeast two-hybrid screen PMID:10933876 SAF-B interacts with HnrnpK directly - interaction was modeled on a demonstrated interaction between

					* mRNA catabolism * telomerase-dependent telomere maintenance	mouse proteins. [PMID: 10809782] Component of Large Microprocessor complex PMID: 15531877]
11	Rplp1	ribosomal protein, large, P1	*Structural constituent of ribosome	*ribosome	*translational elongation	
12	Rplp2	60S acidic ribosomal protein P2	*Structural constituent of ribosome	*ribosome	*translational elongation	An interaction between paxillin and Rplp was demonstrated by co-immunoprecipitation . Paxillin is a component of SIC complex PMID: 15163412 Rplp2 is a component of Grb2-SH2 complex PMID: 12577067
13	Hspa9b	Stress-70 protein, mitochondrial precursor (75 kDa glucose regulated protein) (GRP 75)	* protein binding * ATP binding * unfolded protein binding	* cytoplasm * mitochondrion	* protein folding * protein-nucleus export * response to unfolded protein * response to heat	Hspa9b is a component of Grb2-SH2 complex PMID: 12577067 and a component of multiprotein transcriptional coactivator complex which consists of 122 subunits [PMID: 15175163] Moreover is a participant in an another mediatator multiprotein transcriptional coactivator complex (71 subunits) [PMID: 15175163]

Supplementary Table 2. List of proteins interacting with hnRNA K protein and identified by His-K affinity column procedure.

	gene	NAME	**Molecular Function**	**Cellular Component**	**Biological Process**	**Evidence**
1	Ddef2	development and differentiation enhancing factor 2	*GTPase activator activity *enzyme activator activity	*Golgi apparatus	*regulation of GTPase activity	
2	P19skp1	Cyclin A/CDK2-associated protein p19	* protein binding		* ubiquitin cycle	
3	P4hb	prolyl 4-hydroxylase, beta polypeptide	*protein disulfide isomerase activity *procollagen-proline 4-dioxygenase activity *thyroxine 5'-deiodinase activity *electron transporter activity *isomerase activity	*extracellular region *endoplasmic reticulum	*electron transport *peptidyl-proline hydroxylation to 4-hydroxy-L-proline	An interaction between paxillin and P4HB was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412 Component of multiprotein transcriptional coactivator complex which consists of 63 subunits [PMID: 15175163]
4	Grb2	growth factor receptor bound protein 2	* SH3/SH2 adaptor activity * protein binding	* cytoplasm	* epidermal growth factor receptor signaling pathway * intracellular signaling cascade * Ras protein signal transduction * cell-cell signaling	Component of Grb2-SH2 complex PMID: 12577067
5	Eif5a	eukaryotic translation initiation factor 5A	* nucleic acid binding * translation initiation factor activity * translation factor activity, nucleic acid binding	* cytoplasm	* protein biosynthesis * translational initiation * regulation of translational initiation * viral genome replication	EIF5A interacts with Xrn2 Inteteraction was demonstrated by yeast two-hybrid screen [PMID: 15231747]
6	Rpl23a	ribosomal protein L23a	* nucleic acid binding * RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu	* protein biosynthesis	Component of Grb2-SH2 complex PMID: 12577067
7	Rpl9	ribosomal protein L9				An interaction between paxillin and RPL9 was demonstrated by co-

				Eukaryota)		immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412
8	Rps18	ribosomal protein S18				
9	Rps4	ribosomal protein S4				
10	Rps25	ribosomal protein S25				Component of Grb2-SH2 complex PMID: 12577067
11	Rps19	ribosomal protein S19				Both RPS19 and HnrnpK interacts with vinculin. An interaction between vinculin and RPS19 was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412
12	Rps2	ribosomal protein S2				
13	Rps14	ribosomal protein S14				Component of Grb2-SH2 complex PMID: 12577067
14	Rps20	ribosomal protein S20				Component of Grb2-SH2 complex PMID: 12577067
15	Rps23	ribosomal protein S23				Component of Grb2-SH2 complex PMID: 12577067 An interaction between paxillin and RPS23 was demonstrated by co-immunoprecipitation Paxillin is a component of SIC complex PMID: 15163412
16	Rpl28	ribosomal protein L28				An interaction between paxillin and RPL28 was demonstrated by co-immunoprecipitation Paxillin is a component of SIC complex PMID: 15163412
17	Rpl31	ribosomal protein L31				Component of Grb2-SH2 complex PMID: 12577067
18	Rpl30	ribosomal protein L30				Component of Grb2-SH2 complex PMID: 12577067

19	Rpl22	ribosomal protein L22				
20	Rpl11	ribosomal protein L11				An interaction between paxillin and RPL11 was demonstrated by co-immunoprecipitation Paxillin is a component of SIC complex PMID: 15163412
21	Rpl13	ribosomal protein L13				An interaction between paxillin and RPL13 was demonstrated by co-immunoprecipitation Paxillin is a component of SIC complex PMID: 15163412
22	Rps3a	ribosomal protein S3A				Component of Grb2-SH2 complex PMID: 12577067 Interacts with HnrnpK, L, U and YB-1 in the NEDD4-1 WW2 domain complex [PMID: 16055720]
23	Hspa8	heat shock protein 8	* heat shock protein activity * ATP binding * non-chaperonin molecular chaperone ATPase activity * ATPase activity, coupled * unfolded protein binding	* intracellular * nucleus * cellular component unknown	* protein folding * response to unfolded protein * response to heat	An interaction between vinculin and HSPA8 was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412 Component of Grb2-SH2 complex PMID: 12577067
24	Hspa9A	Heat shock protein 9A	* protein binding * ATP binding * unfolded protein binding	* cytoplasm * mitochondrion	* protein folding * protein-nucleus export * response to unfolded protein * response to heat	
25	Hspd1	heat shock protein 1 (chaperonin)	* ATP binding * unfolded protein binding	* mitochondrion * mitochondrial matrix	* protein folding * response to unfolded protein * mitochondrial matrix protein import	Component of Grb2-SH2 complex PMID: 12577067 and a component of multiprotein transcriptional coactivator complex which consists of 122 subunits [PMID: 15175163] Moreover is a participant in an another mediatator multiprotein transcriptional coactivator complex

						(71 subunits) [PMID: 15175163]
26	Cct5	chaperonin containing TCP1, subunit 5 (epsilon)	* chaperone activity * ATP binding * unfolded protein binding	* cytoplasm	* protein folding	
27	Arbp	60S acidic ribosomal protein P0	* RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu Eukaryota)	* protein biosynthesis * translational elongation	An interaction between paxillin and RPLP0 was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412 RPLP0(Arbp) and HNRNPK were found in a FBP11 WW2 domain complex [PMID: 16055720]
28	Pla2g6	phospholipase A2, group VI				
29	Raf1	murine leukemia viral (v-raf-1) oncogene homolog 1	* protein kinase activity * protein serine/threonine kinase activity * protein-tyrosine kinase activity * receptor signaling protein activity * protein binding * ATP binding * transferase activity * diacylglycerol binding	* mitochondrial outer membrane	* protein amino acid phosphorylation * apoptosis * signal transduction * intracellular signaling cascade * cell proliferation	Raf-1 interacts with Pin1.Interaction was demonstrated by GST pull-down assay and Co-IP. [PMID: 15664191] . HNRNPK was fund in a PIN1 WW domain complex [PMID: 16055720]
30	Psph	phosphoserine phosphatase	* magnesium ion binding * catalytic activity * phosphoserine phosphatase activity * hydrolase activity * phosphoric monoester hydrolase activity		* L-serine metabolism * L-serine biosynthesis * metabolism	

31	Ssh1	Slingshot homolog 1	* phosphoprotein phosphatase activity * protein tyrosine/serine/threonine phosphatase activity		* protein amino acid dephosphorylation	SSH-1S interacts with 14-3-3-zeta PMID: 15660133] interacts An interaction between paxillin and 14-3-3-zeta was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412
32	CacyBP	calcyclin binding protein	* protein binding * cyclin-dependent protein kinase regulator activity	* nucleus * nuclear membrane lumen * cytoplasm	* biological process unknown * ubiquitin cycle * gametogenesis * embryonic development	The homodimer of Calcyclin (S100a6), complexed with Ca2+, interacts with CacyBP PMID:10884380
33	S100a6	Calcyclin (S100 calcium-binding protein A6)	* calcium ion binding * protein binding * growth factor activity	* nuclear membrane	* regulation of cell cycle * cell cycle * cell-cell signaling * axonogenesis * cell proliferation * positive regulation of fibroblast proliferation	Component of Grb2-SH2 complex PMID: 12577067
34	S100a11 calizzarin	S100 calcium binding protein A11	* calcium ion binding	* nucleus * cytoplasm	* negative regulation of DNA replication * negative regulation of cell proliferation	
35	Sod1	Superoxide dismutase 1	* superoxide dismutase activity * copper, zinc superoxide dismutase activity * iron superoxide dismutase activity * manganese superoxide dismutase activity * antioxidant activity * oxidoreductase activity * nickel superoxide dismutase activity * metal ion binding	* cytoplasm	* superoxide metabolism * response to oxidative stress * neurogenesis	
36	Ppt	Palmitoyl-protein	* catalytic activity	* lysosome	* protein modification	

		thioesterase	* palmitoyl-(protein) hydrolase activity * hydrolase activity			
37	Atp5b	ATP synthase, H+ transporting, mitochondrial F1 complex, beta polypeptide	* nucleotide binding * transporter activity * ATP binding * hydrogen-exporting ATPase activity, phosphorylative mechanism * hydrogen ion transporter activity * hydrolase activity * nucleoside-triphosphatase activity * hydrogen-transporting ATP synthase activity, rotational mechanism * hydrogen-transporting ATPase activity, rotational mechanism	* mitochondrion * proton-transporting ATP synthase complex (sensu Eukaryota) * proton-transporting ATP synthase, catalytic core (sensu Eukaryota) * integral to membrane * proton-transporting two-sector ATPase complex * hydrogen-translocating F-type ATPase complex	* generation of precursor metabolites and energy * ATP biosynthesis * ATP synthesis coupled proton transport * proton transport	Both ATP5B and HNRNPK interacts with vinculin. An interaction between vinculin and ATP5B was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412
38	Lamr1	Laminin receptor 1	* structural constituent of ribosome * laminin receptor activity	* intracellular * ribosome * cytosolic small ribosomal subunit (sensu Eukaryota) * integral to plasma membrane * integrin complex * small ribosomal subunit	* protein biosynthesis * regulation of translation * cell adhesion * cell surface receptor linked signal transduction	Both LAMR1 and HNRNPK interacts with vinculin An interaction between vinculin and LAMR1 was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412
39	Hnrpg	Heterogeneous nuclear ribonucleoprotein polypeptide G	* nucleic acid binding * RNA binding * ATP binding	* nucleus * ribonucleoprotein complex	* nuclear mRNA splicing, via spliceosome * RNA processing * mRNA processing	
40	Hnrpl	Heterogeneous nuclear ribonucleoprotein L	* nucleic acid binding * RNA binding	* nucleus * nucleoplasm * ribonucleoprotein complex	* RNA processing * mRNA processing	hnRNP L interacts with hnRNP K. Interaction was demonstrated by yeast two-hybrid screen. [PMID: 10809782] Both hnRNP L and

				* heterogeneous nuclear ribonucleoprotein complex		hnRNP K are components of The NEDD4-1 WW2 domain complex [PMID: 16055720]
41	Hnrpu	Heterogeneous nuclear ribonucleoprotein U	* DNA binding * RNA binding * ATP binding	* nucleus * ribonucleoprotein complex * heterogeneous nuclear ribonucleoprotein complex	* RNA processing	Component of Grb2-SH2 complex PMID: 12577067 Both hnRNP K and U are components of The CA150 WW2 domain complex [PMID: 16055720] Component of Large Microprocessor complex PMID: 15531877] Component of the human Nop56p-associated pre-ribosomal ribonucleoprotein complex PMID:12777385
42	Hnrph	Heterogeneous nuclear ribonucleoprotein H	* nucleic acid binding * RNA binding * poly(U) binding	* nucleus * ribonucleoprotein complex * heterogeneous nuclear ribonucleoprotein complex	* nuclear mRNA splicing, via spliceosome * RNA processing	Component of Grb2-SH2 complex PMID: 12577067 Component of Large Microprocessor complex PMID: 15531877] Both hnRNP H and hnRNP K interacts with vinculin An interaction between vinculin and LAMR1 was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412 Both hnRNP K and H are components of the FE65 WW domain complex [PMID: 16055720]
43	Ddx1	DEAD box protein 1	* nucleic acid binding * RNA binding * RNA helicase activity * helicase activity * phosphoglycerate kinase activity * ATP binding	* cellular component unknown *nucleus	* spliceosome assembly * glycolysis * regulation of translational initiation * ribosome biogenesis * development	Component of Large Microprocessor complex PMID: 15531877] Direct interaction between DDX1 and hnRNPK was demonstrated by co-immunoprecipitation. [PMID: 12183465] Both DDX1 and hnRNP K interacts

			* ATP-dependent helicase activity * hydrolase activity			with vinculin. An interaction between vinculin and DDX1 was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412
44	Ddx5	DEAD box protein 5	* nucleic acid binding * RNA binding * RNA helicase activity * helicase activity * ATP binding * ATP-dependent helicase activity	* nucleus	* cell growth	Component of Grb2-SH2 complex PMID: 12577067 Component of Large Microprocessor complex PMID: 15531877] Both DDX5 and hnRNP K are components of a PIN1 WW domain complex [PMID: 16055720]
45	Ddx17	DEAD box protein 17	* nucleic acid binding * RNA binding * RNA helicase activity * helicase activity * ATP binding * ATP-dependent helicase activity * RNA-dependent ATPase activity	* nucleus	* RNA processing	Component of Large Microprocessor complex PMID: 15531877] Both DDX17 and hnRNPK are components of the FE65 WW domain complex and PIN1 WW domain complex [PMID: 16055720]
46	Elavl1	ELAV (embryonic lethal, abnormal vision, Drosophila)-like 1 (Hu antigen R)	* nucleic acid binding * RNA binding * mRNA binding * mRNA 3'-UTR binding	*cytoplasm	* RNA catabolism * development	Component of multiprotein transcriptional coactivator complex which consists of 71 subunits and another 85 subunits complex [PMID: 15175163]
47	Sfpq	NonO/p54nrb homolog	* nucleic acid binding * DNA binding * RNA binding * pre-mRNA splicing factor activity	* nucleus	* nuclear mRNA splicing, via spliceosome * mRNA processing * RNA splicing	Both Sfpg and hnRNP K interacts with vinculin. An interaction between vinculin and SFPQ was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412 Both Sfpq and hnRNPK are components of: WWOX WW1 domain complex CA150 WW2 domain complex

						FBP11 WW2 domain complex FE65 WW domain complex FBP21 WW2 domain complex [PMID: 16055720]
48	Eef1a1	Eukaryotic translation elongation factor 1 alpha 1	* DNA binding * translation elongation factor activity * GTPase activity * ATP binding * GTP binding * transcriptional repressor activity	* cytoplasm * eukaryotic translation elongation factor 1 complex	* protein biosynthesis * translational elongation * regulation of translation * anti-apoptosis * oncogenesis * regulation of cell shape	Both Eef1a1 and hnRNP K interacts with vinculin. An interaction between vinculin and EEF1A1 was demonstrated by co-immunoprecipitation. Vinculin is a component of SIC complex PMID: 15163412 Component of Grb2-SH2 complex PMID: 12577067 Component of multiprotein transcriptional coactivator complexes 1 2 3 4 [PMID: 15175163] Component of the human Nop56p-associated pre-ribosomal ribonucleoprotein complex PMID:12777385 EEF1A1 interacts with Xrn2 [PMID: 15231747]
49	Poldip3	DNA-directed Polymerase delta interacting protein 3	* nucleic acid binding * RNA binding	* nucleus	* mRNA-nucleus export	
50	Xrn2	5'-3' exoribonuclease 2	* exonuclease activity	* nucleus		F26B1.2 (C.elegans hnRNPK ortholog) interacts directly with Y48B6A.3. (C.elegans XRN2 ortholog) [PMID: 14704431] Xrn2 interacts with EEF1A1 Inteteraction was demonstrated by yeast two-hybrid screen [PMID: 15231747]
51	Exosc7	Exosome component 7	* 3'-5'-exoribonuclease activity * RNA binding * nuclease activity	* exosome (RNase complex) * nucleus	* rRNA processing * RNA processing * RNA catabolism	

			* exonuclease activity * hydrolase activity			
52	Nsep1	Nuclease sensitive element binding protein 1	* DNA binding * double-stranded DNA binding * single-stranded DNA binding * transcription factor activity * RNA binding * receptor activity * transcriptional repressor activity	* nucleus	* regulation of transcription, DNA-dependent * transcription from RNA polymerase II promoter * response to pest, pathogen or parasite	Nsep1(YB-1) interacts directly with hnRNP K – it was demonstrated by Co-IP + GST pull-down assay PMID: 10809782] An interaction between paxillin and NSEP1 was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412 Both Nsep1 and hnRNP K are components of: FE65 WW domain complex NEDD4-1 WW2 domain complex [PMID: 16055720]
53	Actb	Actin beta	* motor activity * structural molecule activity * structural constituent of cytoskeleton	* cytoskeleton * actin filament * actin cytoskeleton * axon	* cell motility * cytoskeleton organization and biogenesis * axonogenesis	ACTB (beta-actin) interacts with HNRPU (hnRNP U). [PMID: 15711563]
54	Actg1	Actin gamma cytoplasmic 1	* nucleic acid binding * motor activity * structural molecule activity * structural constituent of cytoskeleton * structural constituent of muscle	* cytoskeleton * actin filament * actin cytoskeleton	* mitochondrion inheritance * vacuole inheritance * establishment of mitotic spindle orientation * cytokinesis * regulation of transcription from RNA polymerase II promoter * exocytosis * endocytosis * cell motility * muscle contraction * response to osmotic stress * cytoskeleton organization and biogenesis	Both Actg1 and hnRNP K interacts with vinculin and talin. Those interactions were demonstrated by co-immunoprecipitation. Vinculin and talin are components of SIC complex PMID: 15163412 Component of Grb2-SH2 complex PMID: 12577067

					* cell wall organization and biogenesis * budding cell apical bud growth * budding cell isotropic bud growth * sperm individualization * heart development * muscle development * regulation of heart contraction rate * protein secretion * embryonic development * histone acetylation * actin cytoskeleton organization and biogenesis * actin filament reorganization during cell cycle * vesicle transport along actin filament	
55	Capza2	capping protein (actin filament) muscle Z-line, alpha 2	* actin binding * F-actin capping activity * structural constituent of cytoskeleton	* F-actin capping protein complex * actin cytoskeleton	* protein complex assembly * cell motility * actin cytoskeleton organization and biogenesis	An interaction between paxillin and Capza2 was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412
56	C1qbp	Complement component 1q binding protein	* receptor activity * structural molecule activity	* mitochondrion * mitochondrial matrix * plasma membrane * membrane	* immune response	C1qbp interacts with hnRNP D. Interaction was demonstrated by yeast two-hybrid screen [PMID: 15231747] Moreover C1qbp interacts with Rev [PMID: 8626563]and Tat [PMID: 7778269] a regulatory proteins required for HIV-1 replication.
57	H2a	Histone H2A	* DNA binding	* nucleosome * nucleus	* nucleosome assembly * chromosome	

				* chromosome	organization and biogenesis (sensu Eukaryota)	
58	H2b	Histone H2B	* DNA binding	* nucleosome * nucleus * chromosome	* nucleosome assembly * chromosome organization and biogenesis (sensu Eukaryota)	
59	H3	Histone H3	* DNA binding	* nucleosome * nucleus * chromosome	* nucleosome assembly * chromosome organization and biogenesis (sensu Eukaryota) * embryonic development	

Supplementary Table 3. List of proteins interacting with hnRNA K protein and identified by immunoaffinity column procedure.

	gene	NAME	**Molecular Function**	**Cellular Component**	**Biological Process**	**Evidence**
1	Pfkl	6-phosphofructokinase	* 6-phosphofructokinase activity	* cytoplasm * 6-phosphofructokinase complex	*glycolysis	Both Pfkl and hnRNP K interacts with talin in SIC complex. PMID: 15163412
2	Acadl	Acetyl-Coenzyme A dehydrogenase, long-chain	* acyl-CoA dehydrogenase activity * oxidoreductase activity	* mitochondrion * mitochondrial matrix	*electron transport	
3	Anxa2	annexin II - rat	* phospholipase inhibitor activity * calcium ion binding * protein binding * calcium-dependent phospholipid binding * cytoskeletal protein binding	* stress fiber * membrane fraction * cytoplasm * early endosome * cell junction * sarcolemma	* angiogenesis * collagen fibril organization * fibrinolysis	Both Anxa2 and hnRNP K interacts with vinculin in SIC complex. An interaction between vinculin and HNRPK was demonstrated by co-immunoprecipitation PMID: 15163412 Anxa2 is a component of Grb2-SH2 complex PMID: 12577067 Anxa2 interacts also with PKC epsilon PMID: 15251432
4	Ddb1	damage-specific DNA binding protein 1	* nucleic acid binding * DNA binding * damaged DNA binding	*nucleus	* DNA repair * nucleotide-excision repair * ubiquitin cycle	Component of multiprotein transcriptional coactivator complex which consists of 122 subunits [PMID: 15175163] “NONO, LMNA – kHis compexes”
5	Eno1	enolase 1, alpha	* magnesium ion binding * DNA binding * transcription factor activity * transcription corepressor activity * phosphopyruvate hydratase activity * protein binding * plasminogen activator activity * transcriptional repressor activity	* phosphopyruvate hydratase complex * nucleus	* negative regulation of transcription from RNA polymerase II promoter * glycolysis * transcription * regulation of transcription, DNA-dependent * negative regulation of cell growth * negative regulation of transcription, DNA-dependent	An interaction between paxillin and ENO1 was demonstrated by co-immunoprecipitation. Paxillin is a component of SIC complex PMID: 15163412 ENO1 was also found with ATP5a1 in a 14-3-3-zeta-delta complex [MUID: 15324660]

			* lyase activity			
6	Eif3s5	eukaryotic translation initiation factor 3, subunit 5 epsilon, 47kDa	*translation initiation factor activity	*eukaryotic translation initiation factor 3 complex	* protein biosynthesis * regulation of translational initiation	Both Eif3s5 and hnRNP K interacts with Vinculin in SIC complex. PMID: 15163412
7	Taf15	TAF15 RNA polymerase II	* nucleic acid binding * DNA binding * single-stranded DNA binding * RNA polymerase II transcription factor activity * RNA binding * single-stranded RNA binding * zinc ion binding	* nucleus * transcription factor TFIID complex	*cellular physiological process	Both TAF15 and hnRNP K interacts with Vinculin in SIC complex. PMID: 15163412
8	Gfap	glial fibrillary acidic protein delta	* structural molecule activity * structural constituent of cytoskeleton * protein binding	*intermediate filament	* cytoskeleton organization and biogenesis * regulation of heart contraction rate * intermediate filament-based process	
9	H1d	histone H1d - rat	* DNA binding * protein binding	* nucleosome * nucleus * chromosome	* nucleosome assembly * nucleosome spacing	Component of the human Nop56p-associated pre-ribosomal ribonucleoprotein complex PMID:12777385
10	Krt2-6a	keratin 6 alpha	* structural molecule activity * structural constituent of cytoskeleton * protein binding	*intermediate filament	* cellular morphogenesis * cytoskeleton organization and biogenesis * epidermis development	
11	Mif	macrophage migration inhibitory factor	* cytokine activity * protein binding * isomerase activity * phenylpyruvate	*extracellular region	* prostaglandin biosynthesis * inflammatory response * cell surface receptor	Both MIF and hnRNP K interacts with Vinculin in SIC complex. An interaction between vinculin and MIF was demonstrated by co-

			tautomerase activity		linked signal transduction * cell proliferation * regulation of macrophage activation * negative regulation of apoptosis	immunoprecipitation. PMID: 15163412
12	Eif3s6	murine mammary tumor integration site 6 (oncogene homolog) Int6	*translation initiation factor activity	*eukaryotic translation initiation factor 3 complex	* protein biosynthesis * regulation of translational initiation	
13	Naca	nascent polypeptide-associated complex alpha polypeptide NACA	* transcription coactivator activity * TATA-binding protein binding	*nucleus *cytoplasm	*transport *transcription *protein transport *regulation of transcription, DNA-dependent	
14	Rpl37a	ribosomal protein L37a	* nucleic acid binding * RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu Eukaryota)	* protein biosynthesis	
15	Tpi1	triosephosphate isomerase 1	* triose-phosphate isomerase activity * isomerase activity	* cytoplasm	* gluconeogenesis * glycolysis * pentose-phosphate shunt * fatty acid biosynthesis * metabolism	
16	UPIa	Uroplakin Ia (UPIa) (UPKa)	* cytochrome-c oxidase activity * aa3-type cytochrome c 34oxidase * ba3-typ35e cytochrome c oxidase * caa3-type cytochrome c oxidase	*mitochondrion	*electron transport	

			* cbb3-type cytochrome c oxidase * oxidoreductase activity			
17	Atp5a1	Chain A, Rat Liver F1-Atpase	* ATP-binding and phosphorylation-dependent chloride channel activity * ATP binding * hydrogen-exporting ATPase activity, phosphorylative mechanism * hydrogen ion transporter activity * hydrolase activity * hydrolase activity, acting on acid anhydrides, catalyzing transmembrane movement of substances * hydrogen-transporting ATP synthase activity, rotational mechanism * hydrogen-transporting ATPase activity, rotational mechanism	*mitochondrion	* ATP biosynthesis * ATP synthesis coupled proton transport * proton transport	ATP5a1 was found with ENO1 in a 14-3-3-zeta-delta complex [MUID: 15324660] ATP5a1 was also found in Grb2-SH2 complex PMID: 12577067
18	Chrdl2	chordin-related protein neuralin-2	*protein binding	*extracellular space	*negative regulation of BMP signaling pathway cell differentiation	
19	Acat1	mitochondrial acetoacetyl-CoA thiolase	*acetyl-CoA C-acetyltransferase activity *acyltransferase activity *transferase activity	*mitochondra	*pyruvate metabolism *fatty acid biosynthesis	
20	Ndph	NDP	*growth factor activity	*extracellular space	*cell proliferation *cell-cell signaling *signal transduction	
21	Jmjd3	novel protein		*nucleus		

22	p55	p55	*endonuclease activity	*intein-mediated protein splicing		
23	Pairbp1	PAI-1 mRNA-binding protein	*RNA binding	*nucleus		
24	Prdx3	peroxiredoxin 3	*thioredoxin peroxidase activity *alkyl hydroperoxide reductase activity	*extracellular space *mitochondrion		
25	Aldh2	PREDICTED: hypothetical protein XP_579547 similiar to (ALDH2) Aldehyde dehydrogenase 2	* aldehyde dehydrogenase (NAD) activity * aldehyde dehydrogenase [NAD(P)+] activity * electron transporter activity * ATP binding * oxidoreductase activity	*mitochondrion	* carbohydrate metabolism * alcohol metabolism * metabolism	
26	Rpl23	ribosomal protein L23	* nucleic acid binding * RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu Eukaryota)	* protein biosynthesis	Both Rpl23 and hnRNPK interacts with vinculin in SIC complex. PMID: 15163412.
27	Rps14	ribosomal protein S14	* nucleic acid binding * RNA binding * structural constituent of ribosome	* intracellular * ribosome * cytosolic large ribosomal subunit (sensu Eukaryota)	* protein biosynthesis	Rps14 is a component of Grb2-SH2 complex PMID: 12577067
28	Uqcrfs1	Rieske Fe-S protein precursor	*ubiquinol-cytochrome-c reductase activity	*mitochondrion *respiratory chain complex III (sensu Eukaryota) membrane *integral to membrane *inner membrane	*electron transport	
29	Uqcrc2	Ubiquinol-cytochrome-c reductase complex core protein 2,	* metalloendopeptidase activity * ubiquinol-cytochrome-c reductase activity	* mitochondrion * mitochondrial inner membrane * mitochondrial	* electron transport * oxidative phosphorylation * proteolysis and	

		mitochondrial precursor (Complex III subun	* oxidoreductase activity	electron transport chain * inner membrane	peptidolysis * aerobic respiration	