

Supplementary data

Table S1 Dataset of human and human virus ELMs, with common host binding domain targets (separate .doc file).

Table S2 Distribution of eukaryotic and eukaryotic virus ELMs amongst different ELM classes. The number of instances in human and human virus ELMs are shown in parentheses.

Table S3 Distribution of 1159 human and human virus ELM pairs amongst different ELM classes.

Table S4 Distribution of 108 human and human virus ELM pairs with common host targets amongst different ELM classes.

Table S5 Secondary structure conformations in crystal structures of viral motifs in complex with host partners

Figure S1 Flow-chart of the database assembly process.

Figure S2 Average degree of disorder of all eukaryotic (dark red) and eukaryotic virus (light red) proteins. Eukaryotic proteomes include *Homo sapiens*, *Mus musculus*, *Drosophila melanogaster*, *Arabidopsis thaliana*, *Saccharomyces cerevisiae* proteomes. Eukaryotic virus proteins include all proteins from those families, which were included in the dataset of human and human virus ELMs with experimentally validated common host target sites.

Figure S3 Average degree of disorder in viral families, which were included in the dataset of human and human virus ELMs with experimentally validated common host target sites. All proteins, not only the ELM-containing ones are included.

Figure S4 Average degree of disorder of ELM-containing eukaryotic (dark gray), eukaryotic virus (light gray), human (dark red) and human virus (light red) proteins, as computed by PONDR VSL1 algorithm. Human and human virus ELMs target common host motif-binding domains.

Figure S5 Average degree of disorder of randomly chosen 40 AA regions of eukaryotic (dark gray) and eukaryotic virus (dark red) proteins as compared to the +/- 20 AA flanking regions of the eukaryotic (light gray), eukaryotic virus (light red) ELMs. Averaging was carried out over 100 randomly chosen segments.

Figure S6 Average degree of disorder of randomly chosen 40 AA regions of human (dark gray) and human virus (dark red) proteins as compared to the +/- 20 AA flanking regions of the human (light gray) and human virus (light red) ELMs. Averaging was carried out over 100 randomly chosen segments.

Figure S7 Average degree of disorder of the +/- 20 AA flanking regions of the eukaryotic (dark gray), eukaryotic virus (light gray), human (dark red) and human virus (light red) ELMs, as computed by PONDR VSL1 algorithm. Human and human virus ELMs target common host motif-binding domains.

Figure S8 Average number of intrinsically disordered binding sites of eukaryotic (dark gray), eukaryotic virus (light gray), human (dark red) and human virus (light red) proteins. The number of ID binding sites were normalized to 100 AA segments.

Figure S9 Average number of intrinsically disordered binding sites in the +/- 100 AA flanking regions of human and human virus ELMs, as computed by the Disopred3 program.

Table S1 Dataset of human and human virus ELMs, with common host binding domain targets (separate .doc file).

ELM CLASS	HUMAN VIRUS UNIPROT ID	HUMAN VIRUS ELM START	HUMAN VIRUS ELM STOP	HUMAN VIRUS PROTEIN NAME	VIRUS TYPE	VIRAL FAMILY	VIRUS SPECIES	HUMAN UNIPROT ID	HUMAN ELM START	HUMAN ELM STOP	HUMAN PROTEIN NAME	HUMAN - HUMAN VIRUS COMMON TARGET UNIPROT ID	HUMAN - HUMAN VIRUS COMMON TARGET PROTEIN NAME	MOTIF BINDING DOMAIN	iELM	VirusMentha
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q5VV67	1295	1298	Peroxisome proliferator-activated receptor gamma coactivator-related protein 1	P51610	Host cell factor 1 (HCF)	PF13415	x	
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	O43889	78	81	Cyclic AMP-responsive element-binding protein 3 (CREB-3)	P51610	Host cell factor 1 (HCF)	PF13415	x	x
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q01094	97	100	Transcription factor E2F1	P51610	Host cell factor 1 (HCF)	PF13415	x	x
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q16254	389	392	Transcription factor E2F4	P51610	Host cell factor 1 (HCF)	PF13415	x	x

LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q9NWW0	76	79	Host cell factor C1 regulator 1	P51610	Host cell factor 1 (HCF)	PF13415	x	x
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q9NVV9	134	137	THAP domain-containing protein 1	P51610	Host cell factor 1	PF13415	x	x
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q8WTV1	177	180	THAP domain-containing protein 3	P51610	Host cell factor 1 (HCF)	PF13415	x	x
LIG_HCF-1_HBM_1	P06492	361	364	Tegument protein VP16	dsDNA viruses, no RNA stage	Herpesviridae	Herpes simplex virus (type 1 / strain 17)	Q9NS37	303	306	CREB/ATF bZIP transcription factor	P51610	Host cell factor 1 (HCF)	PF13415	x	x
LIG_Integrin_isoDGR_1	P03135	511	513	Capsid protein VP1	ssDNA viruses	Parvoviridae	Adeno-associated virus 2 Srivastava/1982	P35555	2304	2306	Fibrillin-1	P05556 P08648 P18084 P06756	Integrin beta-1, Integrin alpha-5, Integrin alpha-5, Integrin alpha-V	PF08441 PF00362 PF01839	x	

LIG_Integrin_isoDGR_1	P03135	511	513	Capsid protein VP1	ssDNA viruses	Parvoviridae	Adeno-associated virus 2 Srivastava/1982	P02751	263	265	Fibronectin	P05556 P08648 P18084 P06756	Integrin beta-1, Integrin alpha-5, Integrin alpha-5, Integrin alpha-V	PF08441 PF00362 PF01839	x	
LIG_Integrin_isoDGR_1	P03135	511	513	Capsid protein VP1	ssDNA viruses	Parvoviridae	Adeno-associated virus 2 Srivastava/1982	P02751	501	503	Fibronectin	P05556 P08648 P18084 P06756	Integrin beta-1, Integrin alpha-5, Integrin alpha-5, Integrin alpha-V	PF08441 PF00362 PF01839	x	
LIG_Integrin_isoDGR_1	P03135	511	513	Capsid protein VP1	ssDNA viruses	Parvoviridae	Adeno-associated virus 2 Srivastava/1982	P02751	367	369	Fibronectin	P05556 P08648 P18084 P06756	Integrin beta-1, Integrin alpha-5, Integrin alpha-5, Integrin alpha-V	PF08441 PF00362 PF01839	x	
LIG_Integrin_isoDGR_1	P03135	511	513	Capsid protein VP1	ssDNA viruses	Parvoviridae	Adeno-associated virus 2 Srivastava/1982	P02751	1432	1434	Fibronectin	P05556 P06756	Integrin beta-1, Integrin alpha-V	PF08441 PF00362 PF01839	x	
LIG_LIR_Gen_1	P06821	88	94	Matrix protein 2	ssRNA viruses, ssRNA negative-strand viruses	Orthomyxoviridae	Influenza A virus (A/Puerto Rico/8/1934 (H1N1))	O75143	442	447	Autophagy-related protein 13	Q9BXW4	Microtubule-associated proteins 1A/1B light chain 3C	PF02991	x	

LIG_LIR_Gen_1	P06821	88	94	Matrix protein 2	ssRNA viruses, ssRNA negative-strand viruses	Orthomyxoviridae	Influenza A virus (A/Puerto Rico/8/1934 (H1N1))	Q9BQS8	1277	1283	FYVE and coiled-coil domain-containing protein 1	Q9BXW4	Microtubule-associated proteins 1A/1B light chain 3C	PF02991	x	
LIG_LIR_Gen_1	P06821	88	94	Matrix protein 2	ssRNA viruses, ssRNA negative-strand viruses	Orthomyxoviridae	Influenza A virus (A/Puerto Rico/8/1934 (H1N1))	Q14596	730	735	Next to BRCA1 gene 1 protein	Q9BXW4	Microtubule-associated proteins 1A/1B light chain 3C	PF02991	x	
LIG_LIR_Gen_1	P06821	88	94	Matrix protein 2	ssRNA viruses, ssRNA negative-strand viruses	Orthomyxoviridae	Influenza A virus (A/Puerto Rico/8/1934 (H1N1))	O75385	356	360	Serine/threonine-protein kinase ULK1	Q9BXW4	Microtubule-associated proteins 1A/1B light chain 3C	PF02991	x	
LIG_LIR_Gen_1	P06821	88	94	Matrix protein 2	ssRNA viruses, ssRNA negative-strand viruses	Orthomyxoviridae	Influenza A virus (A/Puerto Rico/8/1934 (H1N1))	Q8IYT8	351	356	Serine/threonine-protein kinase ULK2	Q9BXW4	Microtubule-associated proteins 1A/1B light chain 3C	PF02991	x	
LIG_LIR_Gen_1	P06821	88	94	Matrix protein 2	ssRNA viruses, ssRNA negative-strand viruses	Orthomyxoviridae	Influenza A virus (A/Puerto Rico/8/1934 (H1N1))	Q13501	335	341	Sequestosome-1	Q9BXW4	Microtubule-associated proteins 1A/1B light chain 3C	PF02991	x	x

LIG_MYND_1	P03255	113	117	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q8IWI9	2948	2952	MAX gene- associated protein	Q15326	Zinc finger MYND domain- containing protein 11	PF01753	x	x
LIG_MYND_1	P03255	113	117	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q8IWI9	2973	2977	MAX gene- associated protein	Q15326	Zinc finger MYND domain- containing protein 11	PF01753	x	x
LIG_MYND_1	P12978	383	387	Epstein- Barr nuclear antigen 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q8IWI9	2948	2952	MAX gene- associated protein	Q15326	Zinc finger MYND domain- containing protein 11	PF01753	x	
LIG_MYND_1	P12978	383	387	Epstein- Barr nuclear antigen 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q8IWI9	2973	2977	MAX gene- associated protein	Q15326	Zinc finger MYND domain- containing protein 11	PF01753	x	
LIG_MYND_1	P12978	437	441	Epstein- Barr nuclear antigen 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q8IWI9	2948	2952	MAX gene- associated protein	Q15326	Zinc finger MYND domain- containing protein 11	PF01753	x	

LIG_MYND_1	P12978	437	441	Epstein-Barr nuclear antigen 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q8IW19	2973	2977	MAX gene-associated protein	Q15326	Zinc finger MYND domain-containing protein 11	PF01753	x	
LIG_PDZ_Class_1	P03126	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	Q01814	1238	1243	Plasma membrane calcium-transporting ATPase 2	O14907 Q96QZ7	Tax1-binding protein 3, Membrane-associated guanylate kinase	PF00595 PF00595		x
LIG_PDZ_Class_1	P03126	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P23634	1236	1241	Plasma membrane calcium-transporting ATPase 4	O14907 Q96QZ7	Tax1-binding protein 3, Membrane-associated guanylate kinase	PF00595 PF00595		x
LIG_PDZ_Class_1	P03126	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P35222	776	781	Catenin beta-1	O14908	PDZ domain-containing protein GIPC1	PF00595		x
LIG_PDZ_Class_1	P03126	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P48050	440	445	Inward rectifier potassium channel 4	O14936 Q12959	Peripheral plasma membrane protein CASK, Disks large homolog 1	PF00595 PF00595		x

LIG_PDZ_Class_1	P06463	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 18	Q01814	1238	1243	Plasma membrane calcium-transporting ATPase 2	O14936 Q12959	Peripheral plasma membrane protein CASK, Disks large homolog 1	PF00595 PF00595		x
LIG_PDZ_Class_1	P06463	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 18	P23634	1236	1241	Plasma membrane calcium-transporting ATPase 4	Q12959	Disks large homolog 1	PF00595		x
LIG_PDZ_Class_1	P06463	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 18	P11274	1266	1271	Breakpoint cluster region protein	Q12959	Disks large homolog 1	PF00595		x
LIG_PDZ_Class_1	P06463	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 18	P13569	1475	1480	Cystic fibrosis transmembrane conductance regulator (CFTR)	Q12959	Disks large homolog 1	PF00595		x
LIG_PDZ_Class_1	P06463	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 18	P35222	776	781	Catenin beta-1	Q12959	Disks large homolog 1	PF00595		x

LIG_PDZ_Class_1	P06463	153	158	Protein E6	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 18	P48050	440	445	Inward rectifier potassium channel 4	Q12959	Disks large homolog 1	PF00595		x
LIG_PDZ_Class_1	P89079	120	125	E4-ORF1	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 9	Q01814	1238	1243	Plasma membrane calcium-transporting ATPase 2	Q12959	Disks large homolog 1	PF00595		x
LIG_PDZ_Class_1	P89079	120	125	E4-ORF1	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 9	P23634	1236	1241	Plasma membrane calcium-transporting ATPase 4	Q12959	Disks large homolog 1	PF00595		x
LIG_PDZ_Class_1	P89079	120	125	E4-ORF1	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 9	P48050	440	445	Inward rectifier potassium channel 4	Q9HD26	Golgi-associated PDZ and coiled-coil motif-containing protein	PF00595		x
LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotein	Retro-transcribing viruses	Retroviridae	HIV-1 M:B_HXB2 R	O14964	347	352	Hepatocyte growth factor-regulated tyrosine kinase substrate	Q99816	Tumor susceptibility gene 101 protein	PF05743		x

LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	Q6UWE0	648	653	E3 ubiquitin- protein ligase LRSAM1	Q99816	Tumor susceptibility gene 101 protein	PF05743		x
LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	O60291	405	410	E3 ubiquitin- protein ligase MGRN1	Q99816	Tumor susceptibility gene 101 protein	PF05743		x
LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	Q8WUM4	716	721	Programmed cell death 6- interacting protein	Q99816	Tumor susceptibility gene 101 protein	PF05743		x
LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	O14828	63	68	Secretory carrier- associated membrane protein 3	Q99816	Tumor susceptibility gene 101 protein	PF05743		x
LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	O75674	178	183	TOM1-like protein 1	Q99816	Tumor susceptibility gene 101 protein	PF05743		x

LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	Q99816	319	324	Tumor susceptibility gene 101 protein	Q99816	Tumor susceptibility gene 101 protein	PF05743		x
LIG_PTAP_UEV_1	P04591	454	459	Gag polyprotei n	Retro- transcribi ng viruses	Retroviridae	HIV-1 M:B_HXB2 R	Q9H9H4	184	189	Vacuolar protein sorting- associated protein 37B	Q99816	Tumor susceptibility gene 101 protein	PF05743		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavir us type 16	P35869	331	335	Aryl hydrocarbon receptor	P06400	Retinoblastom a-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavir us type 16	P29374	957	961	AT-rich interactive domain- containing protein 4A	P06400	Retinoblastom a-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavir us type 16	O75150	109	113	E3 ubiquitin- protein ligase BRE1B	P06400	Retinoblastom a-associated protein	PF01857		x

LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P24385	5	9	G1/S-specific cyclin-D1	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	Q99708	153	157	DNA endonuclease RBBP8	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	Q9Y6B2	178	182	EP300-interacting inhibitor of differentiation 1	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P32519	51	55	ETS-related transcription factor Elf-1	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P29375	1373	1377	Lysine-specific demethylase 5A	P06400	Retinoblastoma-associated protein	PF01857		x

LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	Q13029	310	314	PR domain zinc finger protein 2	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	O75884	63	67	Putative hydrolase	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	P35251	663	667	Replication factor C subunit 1	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	Q12931	525	529	Heat shock protein 75 kDa, mitochondrial	P06400	Retinoblastoma-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03129	22	26	Protein E7	dsDNA viruses, no RNA stage	Papillomaviridae	Human papillomavirus type 16	Q13107	459	463	Ubiquitin carboxyl-terminal hydrolase 4	P06400	Retinoblastoma-associated protein	PF01857		x

LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	P35869	331	335	Aryl hydrocarbon receptor	P06400	Retinoblastom a-associated protein	PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	P29374	957	961	AT-rich interactive domain- containing protein 4A	P06400 P28749	Retinoblastom a-associated protein, Retinoblastom a-like protein 1	PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	O75150	109	113	E3 ubiquitin- protein ligase BRE1B	P06400 P28749	Retinoblastom a-associated protein, Retinoblastom a-like protein 1	PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	P24385	5	9	G1/S-specific cyclin-D1	P06400 P28749	Retinoblastom a-associated protein, Retinoblastom a-like protein 1	PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q99708	153	157	DNA endonuclease RBBP8	P06400 P28749	Retinoblastom a-associated protein, Retinoblastom a-like protein 1	PF01857 PF01857		x

LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q9Y6B2	178	182	EP300- interacting inhibitor of differentiation 1	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 1, Retinoblastom a-like protein 2	PF01857 PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	P32519	51	55	ETS-related transcription factor Elf-1	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 1, Retinoblastom a-like protein 2	PF01857 PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	P29375	1373	1377	Lysine- specific demethylase 5A	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 1, Retinoblastom a-like protein 2	PF01857 PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q13029	310	314	PR domain zinc finger protein 2	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 1, Retinoblastom a-like protein 2	PF01857 PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	O75884	63	67	Putative hydrolase RBBP9	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 1, Retinoblastom a-like protein 2	PF01857 PF01857 PF01857		x

LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	P35251	663	667	Replication factor C subunit 1	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 2	PF01857 PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q12931	525	529	Heat shock protein 75 kDa, mitochondrial	P06400 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 2	PF01857 PF01857		x
LIG_Rb_LxCxE_1	P03255	122	126	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q13107	459	463	Ubiquitin carboxyl- terminal hydrolase 4	P06400 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 2	PF01857 PF01857		x
LIG_Rb_pABgroove_ 1	P03255	41	49	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q01094	419	427	Transcription factor E2F1	P06400 P28749	Retinoblastom a-associated protein, Retinoblastom a-like protein 1	PF01858 PF01857 PF01858 PF01857	x	x
LIG_Rb_pABgroove_ 1	P03255	41	49	Early E1A 32 kDa protein	dsDNA viruses, no RNA stage	Adenoviridae	Human adenovirus 5	Q14209	420	428	Transcription factor E2F2	P06400 P28749 Q08999	Retinoblastom a-associated protein, Retinoblastom a-like protein 2	PF01858 PF01857 PF01858 PF01857 PF01858 PF01857	x	x

LIG_RGD	P21404	858	860	Genome polyprotein	ssRNA viruses, ssRNA positive-strand viruses, no DNA stage	Picornaviridae	Human coxsackievirus A9 (strain Griggs)	P02751	1524	1526	Fibronectin	P18564	Integrin beta-6	PF00362 PF01839	x	
LIG_RGD	Q66578	764	766	Genome polyprotein	ssRNA viruses, ssRNA positive-strand viruses, no DNA stage	Picornaviridae	Echovirus 22 (strain Harris)	P02751	1524	1526	Fibronectin	P18564	Integrin beta-6	PF00362 PF01839	x	
LIG_SH3_2	P03406	72	77	Protein Nef	Retro-transcribing viruses	Retroviridae	Human immunodeficiency virus type 1 (BRU ISOLATE)	Q13444	767	772	Disintegrin and metalloproteinase domain-containing protein 15	O00499	Myc box-dependent-interacting protein 1	PF00018 PF07653 PF14604		x
LIG_SH3_2	P03406	72	77	Protein Nef	Retro-transcribing viruses	Retroviridae	Human immunodeficiency virus type 1 (BRU ISOLATE)	P50570	829	834	Dynamin-2	P08631	Tyrosine-protein kinase HCK	PF00018		x
LIG_SH3_2	P03406	72	77	Protein Nef	Retro-transcribing viruses	Retroviridae	Human immunodeficiency virus type 1 (BRU ISOLATE)	P27986	305	310	Phosphatidylinositol 3-kinase regulatory subunit alpha	P08631	Tyrosine-protein kinase HCK	PF00018		x

LIG_SH3_2	P03406	72	77	Protein Nef	Retro-transcrib- ing viruses	Retroviridae	Human immunodeficiency virus type 1 (BRU ISOLATE)	Q13905	284	289	Rap guanine nucleotide exchange factor 1	P08631	Tyrosine-protein kinase HCK	PF00018		x
LIG_SH3_2	P03406	72	77	Protein Nef	Retro-transcrib- ing viruses	Retroviridae	Human immunodeficiency virus type 1 (BRU ISOLATE)	Q07889	1151	1156	Son of sevenless homolog 1 (SOS-1)	P08631	Tyrosine-protein kinase HCK	PF00018		x
LIG_SH3_2	P26662	2323	2328	Genome polypeptide	ssRNA viruses, ssRNA positive-strand viruses, no DNA stage	Flaviviridae	Hepatitis C virus (isolate Japanese)	P50570	829	834	Dynamin-2	P08631	Tyrosine-protein kinase HCK	PF00018	x	
LIG_WW_1	P13285	57	60	Latent membrane protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q4VCS5	239	242	Angiomotin	P46934	E3 ubiquitin-protein ligase	PF00397		x
LIG_WW_1	P13285	57	60	Latent membrane protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q15303	1053	1056	Receptor tyrosine-protein kinase	P46934	E3 ubiquitin-protein ligase NEDD4	PF00397		x

LIG_WW_1	P13285	57	60	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	O15350	484	487	Tumor protein p73	P46934	E3 ubiquitin- protein ligase NEDD4	PF00397	x	x
LIG_WW_1	P13285	57	60	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	P37088	641	644	Amiloride- sensitive sodium channel subunit alpha	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P13285	57	60	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	P51168	617	620	Amiloride- sensitive sodium channel subunit beta	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P13285	98	101	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q4VCS5	239	242	Angiomotin	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P13285	98	101	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	Q15303	1053	1056	Receptor tyrosine- protein kinase	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x

LIG_WW_1	P13285	98	101	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	O15350	484	487	Tumor protein p73	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397	x	x
LIG_WW_1	P13285	98	101	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	P37088	641	644	Amiloride- sensitive sodium channel subunit alpha	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P13285	98	101	Latent membran e protein 2	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 4 (strain B95-8)	P51168	617	620	Amiloride- sensitive sodium channel subunit beta	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	Q4VCS5	239	242	Angiomotin	P46934 Q96J02	E3 ubiquitin- protein ligase, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	Q15303	1053	1056	Receptor tyrosine- protein kinase	P46934 Q96J02	E3 ubiquitin- protein ligase NEDD4, E3 ubiquitin- protein ligase Itchy homolog	PF00397 PF00397		x

LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	O15350	484	487	Tumor protein p73	P46934 Q96J02	E3 ubiquitin-protein ligase NEDD4, E3 ubiquitin-protein ligase Itchy homolog	PF00397 PF00397		x
LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	P37088	641	644	Amiloride-sensitive sodium channel subunit alpha	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	P51168	617	620	Amiloride-sensitive sodium channel subunit beta	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	P51170	624	627	Amiloride-sensitive sodium channel subunit gamma	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	23	26	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	Q15797	224	227	Mothers against decapentaplegic homolog 1	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x

LIG_WW_1	P28282	49	52	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	Q4VCS5	239	242	Angiotensin	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	49	52	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	Q15303	1053	1056	Receptor tyrosine-protein kinase	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	49	52	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	O15350	484	487	Tumor protein p73	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	49	52	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	P37088	641	644	Amiloride-sensitive sodium channel subunit alpha	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
LIG_WW_1	P28282	49	52	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	P51168	617	620	Amiloride-sensitive sodium channel subunit beta	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x

LIG_WW_1	P28282	49	52	Protein UL56	dsDNA viruses, no RNA stage	Herpesviridae	Human herpesvirus 2 strain HG52	Q15797	224	227	Mothers against decapentaplegic homolog 1	Q96J02	E3 ubiquitin-protein ligase Itchy homolog	PF00397		x
TRG_NLS_MonoCore_2	P04608	49	54	Protein Tat	Retro-transcribing viruses	Retroviridae	HIV-1 M:B_HXB2 R	P38398	502	507	Breast cancer type 1 susceptibility protein	P52292	Importin subunit alpha-1	PF00514		x
TRG_NLS_MonoExt_N_4	P0C1C7	437	443	Protein W	ssRNA viruses, ssRNA negative-strand viruses	Paramyxoviridae	Nipah virus	P01106	320	327	Myc proto-oncogene protein	O00505	Importin subunit alpha-4	PF00514		x
TRG_NLS_MonoExt_N_4	P0C1C7	437	443	Protein W	ssRNA viruses, ssRNA negative-strand viruses	Paramyxoviridae	Nipah virus	P19838	361	366	Nuclear factor NF-kappa-B p105 subunit	O00629 Q14974	Importin subunit alpha-3, Importin subunit beta-1	PF00514 PF00514		x

Table S2 Distribution of eukaryotic and eukaryotic virus ELMs amongst different ELM classes. The number of instances in human and human virus ELMs are shown in parentheses.

ELM CLASS	NUMBER OF INSTANCES	EUKARYOTE (HUMAN)	EUKARYOTIC VIRUS (HUMAN VIRUS)
CLV_C14_Caspase3-7	39	39(33)	0(0)
CLV_MEL_PAP_1	4	4(0)	0(0)
CLV_NRD_NRD_1	2	2(0)	0(0)
CLV_PCSK_FUR_1	13	1(1)	12(9)
CLV_PCSK_KEX2_1	1	1(0)	0(0)
CLV_PCSK_PC1ET2_1	6	6(1)	0(0)
CLV_PCSK_SKI1_1	2	2(2)	0(0)
CLV_Separin_Fungi	4	4(0)	0(0)
CLV_Separin_Metazoa	5	5(5)	0(0)
CLV_TASPASE1	2	2(2)	0(0)
DEG_APCC_DBOX_1	11	11(6)	0(0)
DEG_APCC_KENBOX_2	16	15(11)	1(0)
DEG_APCC_TPR_1	16	16(5)	0(0)
DEG_COP1	4	4(2)	0(0)
DEG_CRL4_CDT2_1	6	6(4)	0(0)
DEG_CRL4_CDT2_2	1	1(0)	0(0)
DEG_MDM2_1	2	2(2)	0(0)
DEG_Nend_UBRbox_4	8	8(0)	0(0)
DEG_ODPH_VHL_1	5	5(5)	0(0)
DEG_SCF_COI1_1	6	6(0)	0(0)
DEG_SCF_FBW7_1	6	6(6)	0(0)
DEG_SCF_FBW7_2	2	1(1)	1(0)
DEG_SCF_SKP2-CKS1_1	3	3(2)	0(0)
DEG_SCF_TIR1_1	7	7(0)	0(0)
DEG_SCF_TRCP1_1	18	16(16)	2(2)
DEG_SIAH_1	9	9(8)	0(0)
DOC_AGCK_PIF_1	10	10(6)	0(0)
DOC_AGCK_PIF_2	5	5(4)	0(0)
DOC_AGCK_PIF_3	5	5(1)	0(0)
DOC_ANK_TNKS_1	17	17(17)	0(0)
DOC_CKS1_1	8	8(0)	0(0)
DOC_CYCLIN_1	21	20(16)	1(1)
DOC_MAPK_1	16	16(10)	0(0)
DOC_MAPK_2	7	7(4)	0(0)
DOC_PIKK_1	4	4(3)	0(0)
DOC_PP1_RVXF_1	19	18(9)	1(1)
DOC_PP1_SILK_1	14	14(7)	0(0)
DOC_PP2B_1	9	7(2)	2(0)
DOC_PP2B_2	8	8(5)	0(0)
DOC_SPAK_OSR1_1	13	13(6)	0(0)
DOC_USP7_1	10	10(10)	0(0)

DOC_USP7_2	1	0(0)	1(1)
DOC_WD40_RPTOR_TOS_1	3	3(3)	0(0)
DOC_WW_Pin1_4	96	94(62)	2(2)
LIG_14-3-3_1	15	14(9)	1(0)
LIG_14-3-3_2	7	7(4)	0(0)
LIG_14-3-3_3	22	22(17)	0(0)
LIG_Actin_RPEL_3	6	6(0)	0(0)
LIG_Actin_WH2_1	6	6(4)	0(0)
LIG_Actin_WH2_2	12	12(2)	0(0)
LIG_AP_GAE_1	7	7(3)	0(0)
LIG_AP2alpha_1	3	3(1)	0(0)
LIG_AP2alpha_2	23	23(8)	0(0)
LIG_APCC_Cbox_1	2	2(1)	0(0)
LIG_APCC_Cbox_2	3	3(0)	0(0)
LIG_BIR_III_1	1	1(1)	0(0)
LIG_BIR_III_2	3	3(2)	0(0)
LIG_BIR_III_3	4	4(0)	0(0)
LIG_BIR_III_4	2	2(0)	0(0)
LIG_BRCT_BRCA1_1	5	5(5)	0(0)
LIG_BRCT_BRCA1_2	1	1(1)	0(0)
LIG_BRCT_MDC1_1	1	1(1)	0(0)
LIG_CaMK_CASK_1	6	6(3)	0(0)
LIG_CAP-Gly_1	3	3(3)	0(0)
LIG_CAP-Gly_2	1	1(1)	0(0)
LIG_Clathr_ClatBox_1	12	12(6)	0(0)
LIG_Clathr_ClatBox_2	2	2(2)	0(0)
LIG_CORNBOX	4	4(4)	0(0)
LIG_CtBP_PxDLS_1	27	26(18)	1(1)
LIG_Dynein_DLC8_1	8	7(4)	1(1)
LIG_EABR_CEP55_1	6	6(3)	0(0)
LIG_EF_ALG2_ABM_1	9	9(9)	0(0)
LIG_EF_ALG2_ABM_2	3	3(3)	0(0)
LIG_EH_1	88	88(38)	0(0)
LIG_EH1_1	8	8(3)	0(0)
LIG_eIF4E_1	13	13(6)	0(0)
LIG_eIF4E_2	1	1(1)	0(0)
LIG_EVH1_1	19	15(11)	0(0)
LIG_EVH1_2	8	8(3)	0(0)
LIG_EVH1_3	3	3(2)	0(0)
LIG_FAT_LD_1	4	4(3)	0(0)
LIG_FHA_1	5	4(1)	0(0)
LIG_FHA_2	6	6(2)	0(0)
LIG_GLEBS_BUB3_1	5	5(2)	0(0)
LIG_GYF	3	3(2)	0(0)
LIG_HCF-1_HBM_1	12	11(8)	1(1)

LIG_HOMEBOX	1	1(1)	0(0)
LIG_HP1_1	9	9(5)	0(0)
LIG_Integrin_isoDGR_1	8	7(5)	1(1)
LIG_IQ	35	35(9)	0(0)
LIG_LIR_Apic_2	1	1(0)	0(0)
LIG_LIR_Gen_1	21	20(16)	1(1)
LIG_LIR_LC3C_4	1	1(1)	0(0)
LIG_LIR_Nem_3	1	1(0)	0(0)
LIG_LYPXL_L_2	2	0(0)	2(2)
LIG_LYPXL_S_1	6	2(0)	4(0)
LIG_MAD2	2	2(2)	0(0)
LIG_MYND_1	6	3(2)	3(3)
LIG_MYND_2	3	3(3)	0(0)
LIG_MYND_3	2	2(2)	0(0)
LIG_NBox_RRM_1	2	2(2)	0(0)
LIG_NRBOX	17	17(17)	0(0)
LIG_OCRL_FandH_1	3	3(3)	0(0)
LIG_PAM2_1	22	22(16)	0(0)
LIG_PAM2_2	4	4(3)	0(0)
LIG_PCNA_PIPBox_1	7	7(3)	0(0)
LIG_PDZ_Class_1	48	37(21)	11(7)
LIG_PDZ_Class_2	13	13(8)	0(0)
LIG_PDZ_Class_3	1	1(1)	0(0)
LIG_PTAP_UEV_1	21	11(11)	10(8)
LIG_PTB_Apo_2	19	19(14)	0(0)
LIG_PTB_Phospho_1	17	16(14)	1(0)
LIG_Rb_LxCxE_1	32	18(15)	14(7)
LIG_Rb_pABgroove_1	3	2(2)	1(1)
LIG_RGD	17	13(5)	4(3)
LIG_RRM_PRI_1	3	3(0)	0(0)
LIG_SH2_GRB2	6	6(5)	0(0)
LIG_SH2_PTP2	1	1(0)	0(0)
LIG_SH2_SRC	10	9(5)	1(0)
LIG_SH2_STAT3	2	1(1)	1(0)
LIG_SH2_STAT5	13	13(12)	0(0)
LIG_SH2_STAT6	1	1(1)	0(0)
LIG_SH3_1	5	5(5)	0(0)
LIG_SH3_2	19	17(12)	2(2)
LIG_SH3_3	16	11(5)	5(3)
LIG_SH3_5	3	3(3)	0(0)
LIG_Sin3_1	4	4(4)	0(0)
LIG_Sin3_2	3	3(3)	0(0)
LIG_Sin3_3	2	2(1)	0(0)
LIG_SPRY_1	2	2(1)	0(0)
LIG_SUFU_1	5	5(2)	0(0)

LIG_SUMO_SBM_1	39	36(30)	3(3)
LIG_SUMO_SBM_2	8	8(7)	0(0)
LIG_SxIP_EBH_1	6	6(6)	0(0)
LIG_TPR	6	6(3)	0(0)
LIG_TRAF2_1	13	12(12)	1(0)
LIG_TRAF2_2	1	0(0)	1(1)
LIG_TRAF6	11	10(5)	1(1)
LIG_TRFH_1	3	3(3)	0(0)
LIG_TYR_ITAM	7	7(6)	0(0)
LIG_TYR_ITIM	5	5(4)	0(0)
LIG_TYR_ITSM	5	5(5)	0(0)
LIG_ULM_U2AF65_1	5	5(5)	0(0)
LIG_WD40_WDR5_1	1	1(0)	0(0)
LIG_WD40_WDR5_WIN_1	6	6(6)	0(0)
LIG_WH1	3	3(3)	0(0)
LIG_WRPW_1	1	1(1)	0(0)
LIG_WRPW_2	2	2(0)	0(0)
LIG_WW_1	28	13(8)	15(12)
LIG_WW_2	3	3(0)	0(0)
LIG_WW_3	1	1(0)	0(0)
MOD_ASX_betaOH_EGF	3	3(1)	0(0)
MOD_CAAXbox	2	2(1)	0(0)
MOD_CDK_1	10	10(6)	0(0)
MOD_CK1_1	2	2(2)	0(0)
MOD_CK2_1	7	5(3)	2(2)
MOD_CMANNOS	24	24(24)	0(0)
MOD_GlcNHglycan	6	6(0)	0(0)
MOD_GSK3_1	22	22(21)	0(0)
MOD_LATS_1	22	22(11)	0(0)
MOD_NEK2_1	3	3(2)	0(0)
MOD_N-GLC_1	55	0(0)	55(55)
MOD_N-GLC_2	5	5(4)	0(0)
MOD_NMyristoyl	47	35(29)	12(9)
MOD_OFUCOSY	4	4(3)	0(0)
MOD_OGLYCOS	2	2(2)	0(0)
MOD_PIKK_1	30	30(24)	0(0)
MOD_PK_1	1	1(0)	0(0)
MOD_PKA_1	25	25(13)	0(0)
MOD_PKA_2	28	28(14)	0(0)
MOD_PKB_1	19	19(16)	0(0)
MOD_PLK	2	2(2)	0(0)
MOD_ProDKin_1	36	36(23)	0(0)
MOD_SPalmitoyl_2	2	2(2)	0(0)
MOD_SPalmitoyl_4	1	1(0)	0(0)
MOD_SUMO	12	12(9)	0(0)

MOD_TYR_CSK	5	5(0)	0(0)
MOD_TYR_DYR	3	3(0)	0(0)
MOD_WntLipid	1	1(0)	0(0)
TRG_AP2beta_CARGO_1	3	3(3)	0(0)
TRG_Cilium_Arf4_1	1	1(0)	0(0)
TRG_Cilium_RVxP_2	2	2(1)	0(0)
TRG_ENDOCYTIC_2	10	4(2)	6(4)
TRG_ER_diArg_1	26	26(22)	0(0)
TRG_ER_diLys_1	13	10(6)	3(2)
TRG_ER_FFAT_1	17	17(12)	0(0)
TRG_ER_KDEL_1	8	7(3)	0(0)
TRG_Golgi_diPhe_1	5	5(3)	0(0)
TRG_LysEnd_APsAcLL_1	16	13(10)	3(2)
TRG_LysEnd_APsAcLL_3	3	3(1)	0(0)
TRG_LysEnd_GGAACLL_1	6	6(4)	0(0)
TRG_LysEnd_GGAACLL_2	2	2(2)	0(0)
TRG_NES_CRM1_1	18	14(10)	4(4)
TRG_NLS_Bipartite_1	9	7(4)	1(1)
TRG_NLS_MonoCore_2	17	8(6)	9(2)
TRG_NLS_MonoExtC_3	18	10(6)	7(3)
TRG_NLS_MonoExtN_4	26	17(12)	9(2)
TRG_PEX_1	27	27(7)	0(0)
TRG_PTS1	5	5(3)	0(0)
TRG_PTS2	2	2(0)	0(0)

Table S3 Distribution of 1159 human and human virus ELM pairs amongst different ELM classes.

ELM CLASS	HUMAN VIRUS NUMBER OF OCCURENCES	HUMAN NUMBER OF OCCURENCE
CLV_PCSK_FUR_1	9	1
DEG_SCF_TRCP1_1	2	16
DOC_CYCLIN_1	1	16
DOC_PP1_RVXF_1	1	9
DOC_WW_Pin1_4	2	51
LIG_CtBP_PxDLS_1	1	18
LIG_Dynein_DLC8_1	1	2
LIG_HCF-1_HBM_1	1	8
LIG_Integrin_isoDGR_1	1	5
LIG_LIR_Gen_1	1	16
LIG_MYND_1	3	2
LIG_PDZ_Class_1	7	15
LIG_PTAP_UEV_1	8	11
LIG_Rb_LxCxE_1	7	15
LIG_Rb_pABgroove_1	1	2
LIG_RGD	3	5
LIG_SH3_2	2	11
LIG_SH3_3	3	3
LIG_SUMO_SBM_1	3	28
LIG_TRAF6	1	5
LIG_WW_1	12	8
MOD_CK2_1	2	3
MOD_NMyristoyl	9	29
TRG_ENDOCYTIC_2	4	2
TRG_ER_diLys_1	2	6
TRG_LysEnd_APsAcLL_1	2	10
TRG_NES_CRM1_1	4	10
TRG_NLS_Bipartite_1	1	4
TRG_NLS_MonoCore_2	2	6
TRG_NLS_MonoExtC_3	3	6
TRG_NLS_MonoExtN_4	2	12

Table S4 Distribution of 108 human and human virus ELM pairs with common host targets amongst different ELM classes.

ELM CLASS	HUMAN VIRUS NUMBER OF OCCURENCE	HUMAN NUMBER OF OCCURENCE
LIG_HCF-1_HBM_1	1	8
LIG_Integrin_isoDGR_1	1	5
LIG_LIR_Gen_1	1	6
LIG_MYND_1	3	2
LIG_PDZ_Class_1	3	6
LIG_PTAP_UEV_1	1	8
LIG_Rb_LxCxE_1	2	13
LIG_Rb_pABgroove_1	1	2
LIG_RGD	2	1
LIG_SH3_2	2	5
LIG_WW_1	4	7
TRG_NLS_MonoCore_2	1	1
TRG_NLS_MonoExtN_4	1	2

Table S5 Secondary structure conformations in crystal structures of viral motifs in complex with host partners

Motif	Sequence	Viral Protein	Host partner	PDB code	Secondary structure
LIG_SH3_2	PQVPLR	HIV-1 Nef	Fyn SH3 domain (<i>Homo sapiens</i>)	1EFN	β -bridge
LIG_SH3_2	PQVPLR	HIV-1 Nef	Fyn SH3 domain (<i>Homo sapiens</i>)	1EFN	bend or no secondary structure
TRG_NLS_MonoExtC	KKKRKVE	SV40 CN	Importin alpha (<i>Mus musculus</i>)	1Q1T	bend or no secondary structure
TRG_NLS_MonoExtC	KKKRKVE	SV40 CN	Importin alpha (<i>Mus musculus</i>)	1Q1T	turn
LIG_Rb_pABgroove_1	PTLHELYD L	adenovirus E1 CR1	Retinoblastoma-associated protein (<i>Homo sapiens</i>)	2R7G	bend or no secondary structure
LIG_Rb_pABgroove_1	PTLHELYD L	adenovirus E1 CR1	Retinoblastoma-associated protein (<i>Homo sapiens</i>)	2R7G	α -helix or turn
MOD_N-GLC_1	CNSTQL	HIV-1 GP120	CD4 and antibody 17B (<i>Homo sapiens</i>)	1G9 M	α -helix
MOD_N-GLC_1	CNSTQL	HIV-1 GP120	CD4 and antibody 13B (<i>Homo sapiens</i>)	3IDX	turn
LIG_SH2_SRC	YEEIP	Hamster polyomavirus phosphotyrosyl peptide	Fyn SH2 domain (<i>Homo sapiens</i>)	1AOT	bend or no secondary structure
LIG_SH2_SRC	YEEIP	Hamster polyomavirus phosphopeptide	p56lck SH2 domain (<i>Homo sapiens</i>)	1LCJ	β -bridge
MOD_N-GLC_1	YNSTFF	SARS coronavirus spike receptor-binding domain	Ace2 (<i>Homo sapiens</i>)	2AJF	turn
MOD_N-GLC_1	YNSTFF	SARS coronavirus spike protein receptor-	Ace2 (<i>Homo sapiens</i>)	2AJF	α -helix

		binding domain			
MOD_N-GLC_1	YNSTFF	SARS coronavirus spike protein receptor-binding domain	Ace2 (<i>Homo sapiens</i>)	3SCJ	α -helix and turn
MOD_N-GLC_1	FNATKF	SARS coronavirus spike protein receptor-binding domain	Ace2 (<i>Homo sapiens</i>)	2AJF	α -helix
MOD_N-GLC_1	FNATKF	SARS coronavirus spike protein receptor-binding domain	Ace2 (<i>Homo sapiens</i>)	2AJF	turn
MOD_N-GLC_1	FNATKF	SARS coronavirus spike protein receptor-binding domain	Ace2 (<i>Homo sapiens</i>)	3SCJ	bend or no secondary structure
TRG_LysEnd_APsaAcLL_1	ENTSL	HIV-1 Nef	AP-2 (<i>Rattus norvegicus</i>)	4NEE	turn
TRG_LysEnd_APsaAcLL_1	ENTSL	HIV-1 Nef	AP-2 (<i>Rattus norvegicus</i>)	4NEE	β -bridge

Figure S1

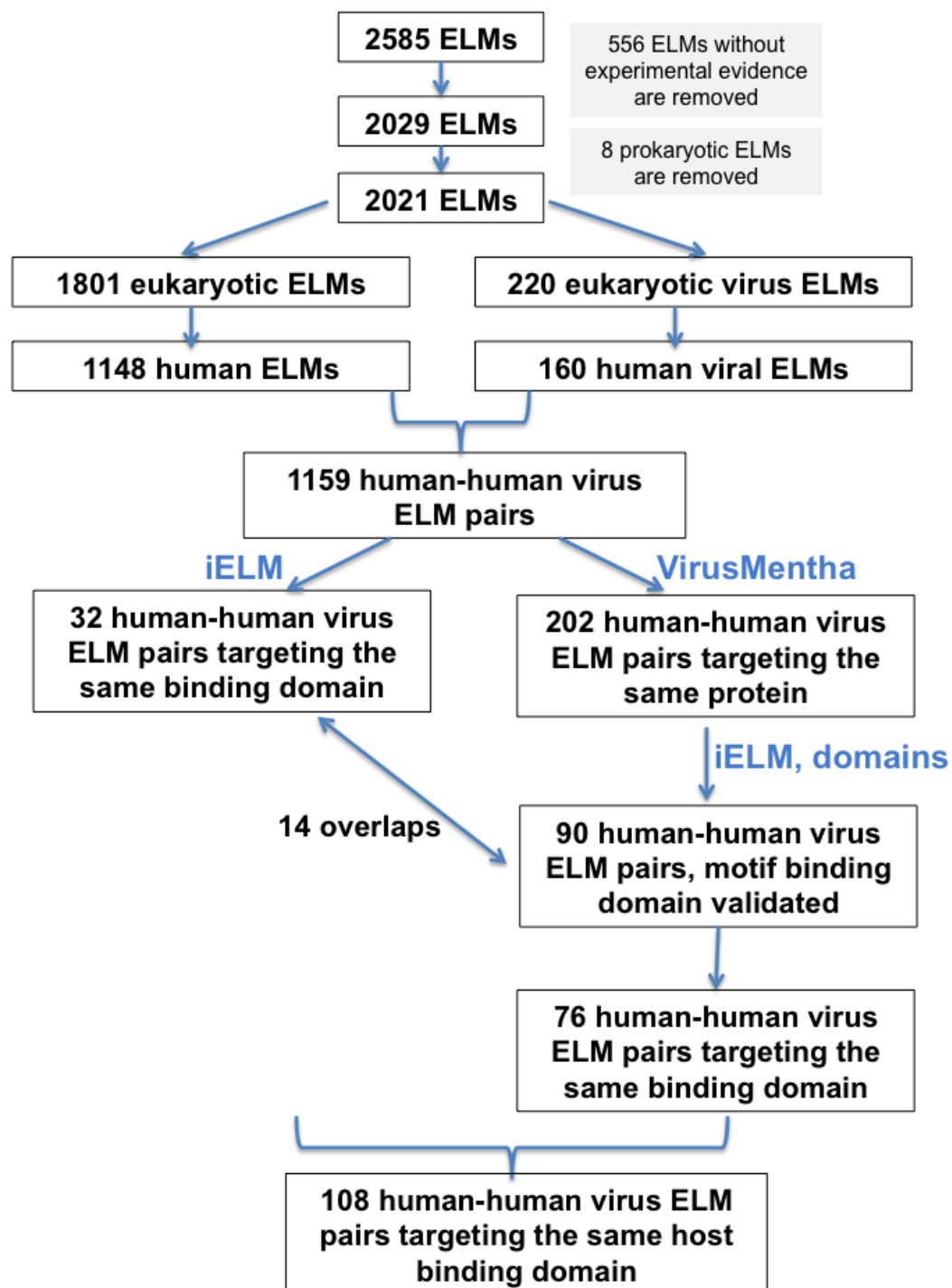


Figure S2

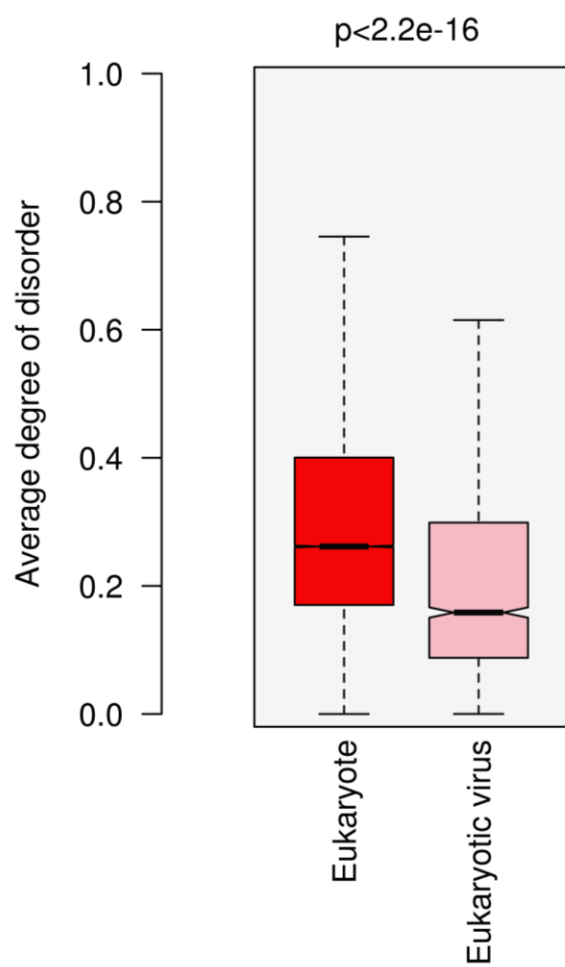


Figure S3

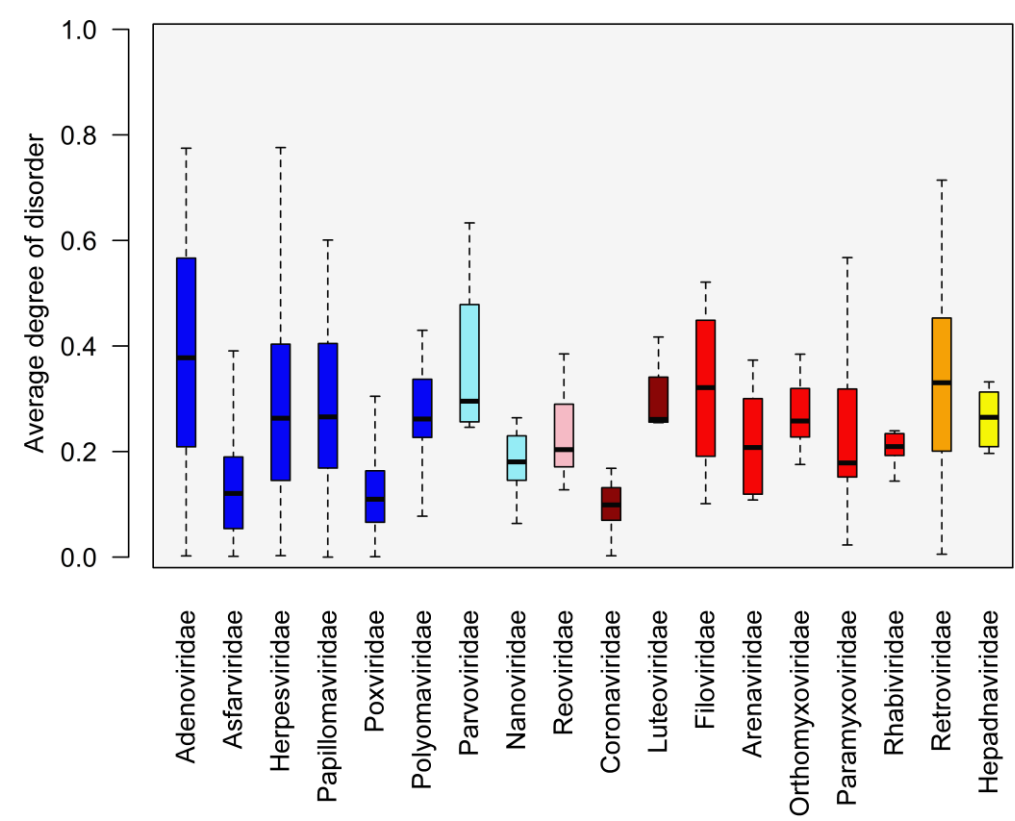


Figure S4

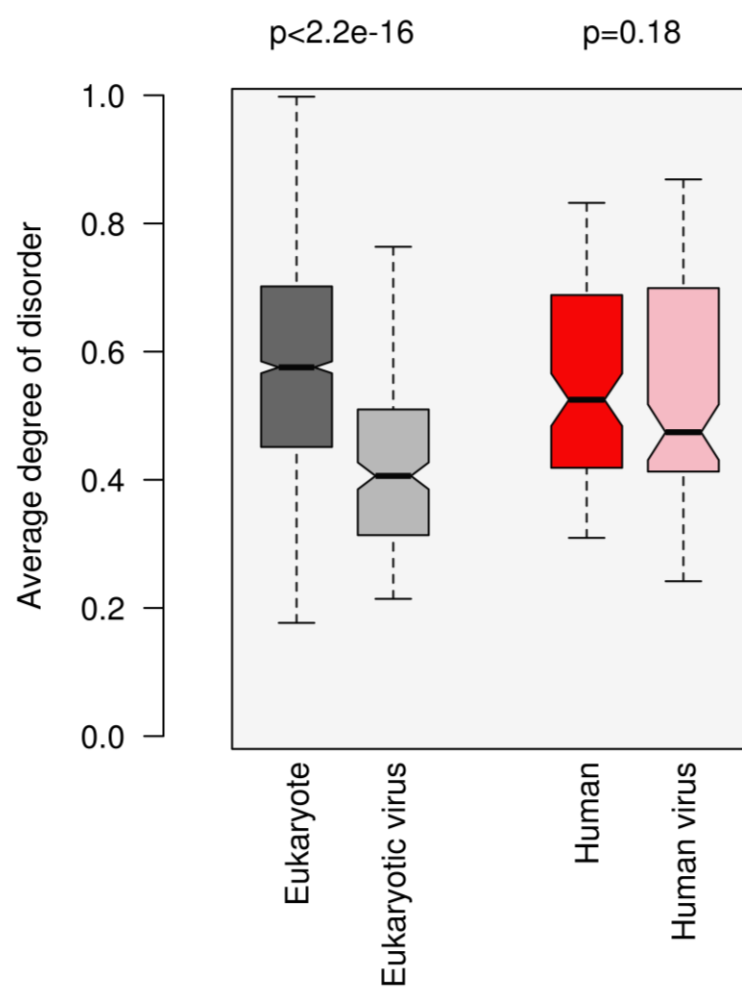


Figure S5

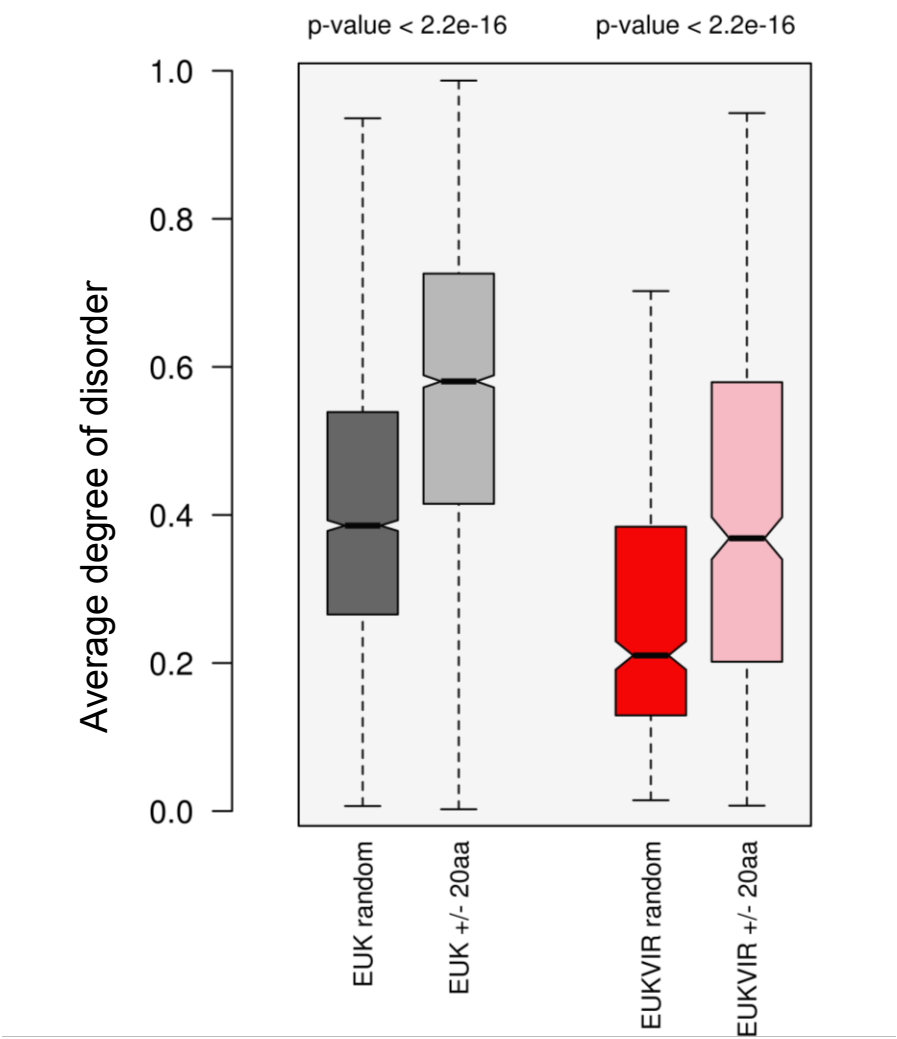


Figure S6

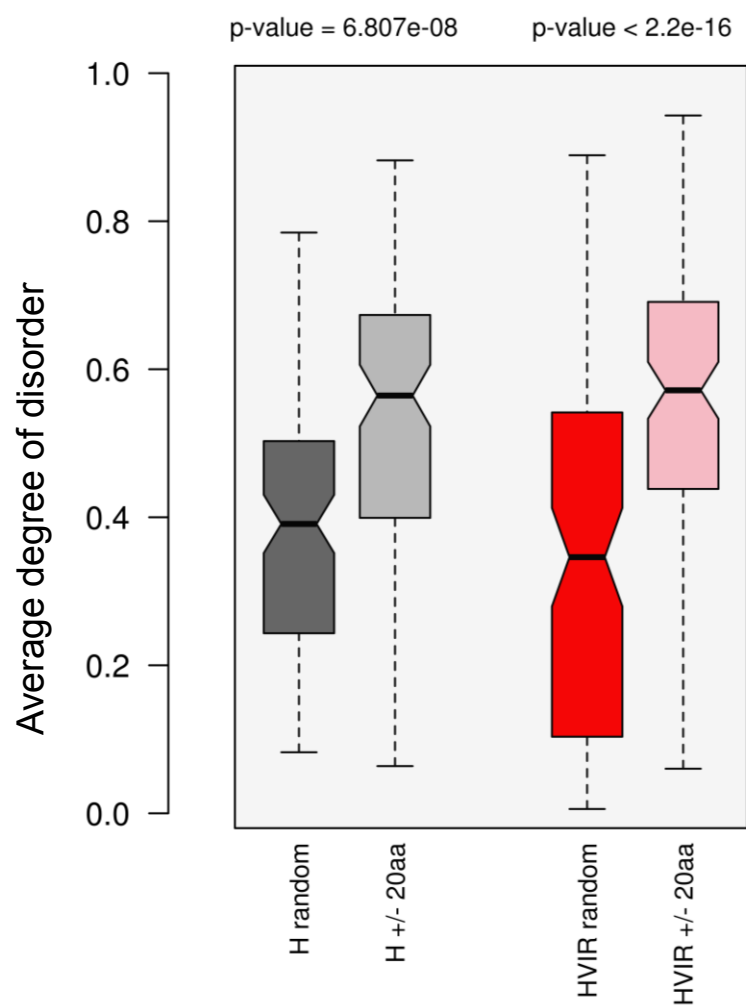


Figure S7

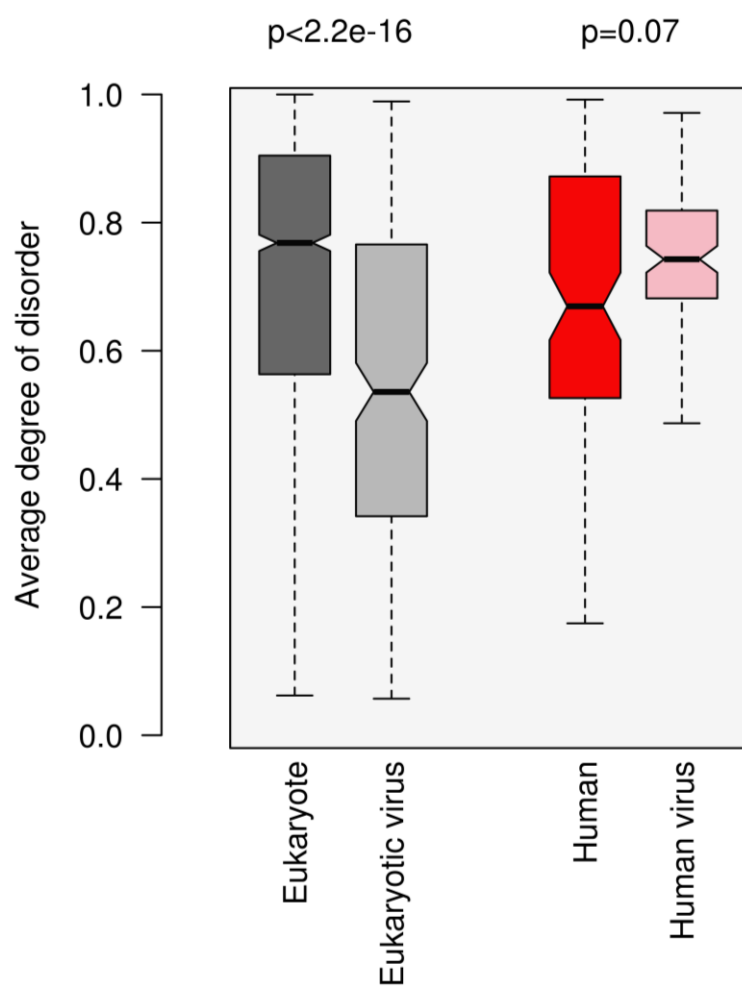


Figure S8

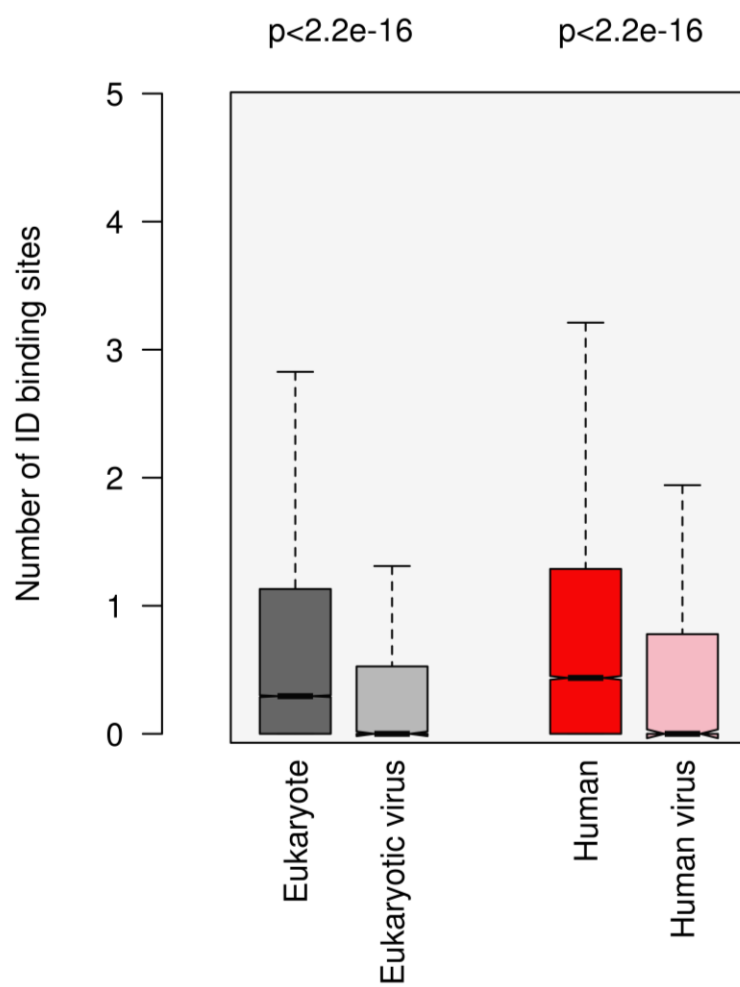


Figure S9

