

Supplementary Information

Table S1. Human RNA helicases with structural information deposited in PDB database.

Uniprot Entry	Protein Name	Gene Names	Protein Size (aa number)	Cross-Reference (PDB)
Q13838	Spliceosome RNA helicase DDX39B	<i>DDX39B</i> , <i>UAP56</i>	428	1T5I; 1T6N; 1XTI; 1XTJ; 1XTK
P26196	Probable ATP-dependent RNA helicase DDX6	<i>DDX6</i> , <i>HLR2</i>	483	1VEC; 2WAX; 2WAY; 4CRW; 4CT4; 4CT5
Q9Y265	RuvB-like 1	<i>RUVBL1</i> , <i>TIP49</i>	456	2C9O; 2XSZ
P51531	Probable global transcription activator SNF2L2	<i>SMARCA2</i> , <i>BAF190B</i>	1590	2DAT
Q7L2E3	Putative ATP-dependent RNA helicase DHX30	<i>DHX30</i> , <i>DDX30</i>	1194	2DB2
Q9BWF3	RNA-binding protein 4 (Lark homolog)	<i>RBM4</i> , <i>RBM4A</i>	364	2DNQ
P82979	SAP domain-containing ribonucleoprotein	<i>SARNP</i> , <i>HCC1</i>	210	2DO1
Q9BQ39	ATP-dependent RNA helicase DDX50	<i>DDX50</i>	737	2E29
Q14562	ATP-dependent RNA helicase DHX8	<i>DHX8</i> , <i>DDX8</i>	1220	2EQS; 3I4U
P60842	Eukaryotic initiation factor 4A-I (eIF-4A-I)	<i>EIF4A1</i> , <i>DDX2A</i>	406	2G9N; 2ZU6; 3EIQ
P51532	Transcription activator BRG1	<i>SMARCA4</i> , <i>BRG1</i>	1647	2GRC; 2H60; 3UVD
P38919	Eukaryotic initiation factor 4A-III (eIF-4A-III)	<i>EIF4A3</i> , <i>DDX48</i>	411	2HXY; 2HYI; 2J0Q; 2J0S; 2J0U; 2XB2; 3EX7; 4C9B
O00571	ATP-dependent RNA helicase DDX3X	<i>DDX3X</i> , <i>DBX</i>	662	2I4I; 2JGN; 3JRV; 4O2E; 4O2F
O75771	DNA repair protein RAD51 homolog 4 (R51H3)	<i>RAD51D</i> , <i>RAD51L3</i>	328	2KZ3
O95786	Probable ATP-dependent RNA helicase DDX58	<i>DDX58</i>	925	2LWD; 2LWE; 2QFB; 2YKG; 3LRN; 3LRR; 3NCU; 3OG8; 3TMI; 3ZD6; 3ZD7; 4AY2; 4BPB; 4NQK; 4ON9; 4P4H
Q9NR30	Nucleolar RNA helicase 2	<i>DDX21</i>	783	2M3D
Q9UHI6	Probable ATP-dependent RNA helicase DDX20	<i>DDX20</i> , <i>GEMIN3</i>	824	2OXC; 3B7G
Q9UJV9	Probable ATP-dependent RNA helicase DDX41	<i>DDX41</i> , <i>ABS</i>	622	2P6N
Q13206	Probable ATP-dependent RNA helicase DDX10	<i>DDX10</i>	875	2PL3
O75643	U5 small nuclear 200 kDa helicase	<i>SNRNP200</i>	2136	2Q0Z; 4F91; 4F92; 4F93; 4KIT
Q9UHL0	ATP-dependent RNA helicase DDX25	<i>DDX25</i>	483	2RB4

Table S1. *Cont.*

Uniprot Entry	Protein Name	Gene Names	Protein Size (aa number)	Cross-Reference (PDB)
Q96C10	Probable ATP-dependent RNA helicase DHX58 (RIG-I-like receptor 3)	<i>DHX58, LGP2</i>	678	2RQA; 2W4R; 3EQT
Q5T1V6	Probable ATP-dependent RNA helicase DDX59	<i>DDX59, ZNHIT5</i>	619	2YQP
Q9H0S4	Probable ATP-dependent RNA helicase DDX47	<i>DDX47</i>	455	3BER
Q14240	Eukaryotic initiation factor 4A-II (eIF-4A-II)	<i>EIF4A2, DDX2B</i>	407	3BOR
Q9Y2R4	Probable ATP-dependent RNA helicase DDX52	<i>DDX52, ROK1</i>	599	3DKP
Q9UMR2	ATP-dependent RNA helicase DDX19B	<i>DDX19, TDBP</i>	479	3EWS; 3FHC; 3FHT; 3FMO; 3FMP; 3G0H
P17844	Probable ATP-dependent RNA helicase DDX5	<i>DDX5, HELR</i>	614	3FE2; 4A4D
Q86TM3	Probable ATP-dependent RNA helicase DDX53	<i>DDX53, CAGE</i>	631	3IUY
Q08211	ATP-dependent RNA helicase A (RHA)	<i>DHX9, LKP</i>	1270	3LLM; 3VYX; 3VYY
Q9NVP1	ATP-dependent RNA helicase DDX18	<i>DDX18</i>	670	3LY5
Q8IYB8	ATP-dependent RNA helicase SUPV3L1, mitochondrial	<i>SUPV3L1, SUV3</i>	786	3RC3; 3RC8
O94762	ATP-dependent DNA helicase Q5	<i>RECQL5</i>	991	4BK0
Q8IYD8	Fanconi anemia group M protein (Protein FACM)	<i>FANCM</i>	2048	4BXO; 4DAY; 4DRB; 4E45; 4M6W
P19447	TFIIH basal transcription factor complex helicase XPB subunit	<i>ERCC3, XPBC</i>	782	4ERN
Q9BUQ8	Probable ATP-dependent RNA helicase DDX23	<i>DDX23</i>	820	4NHO

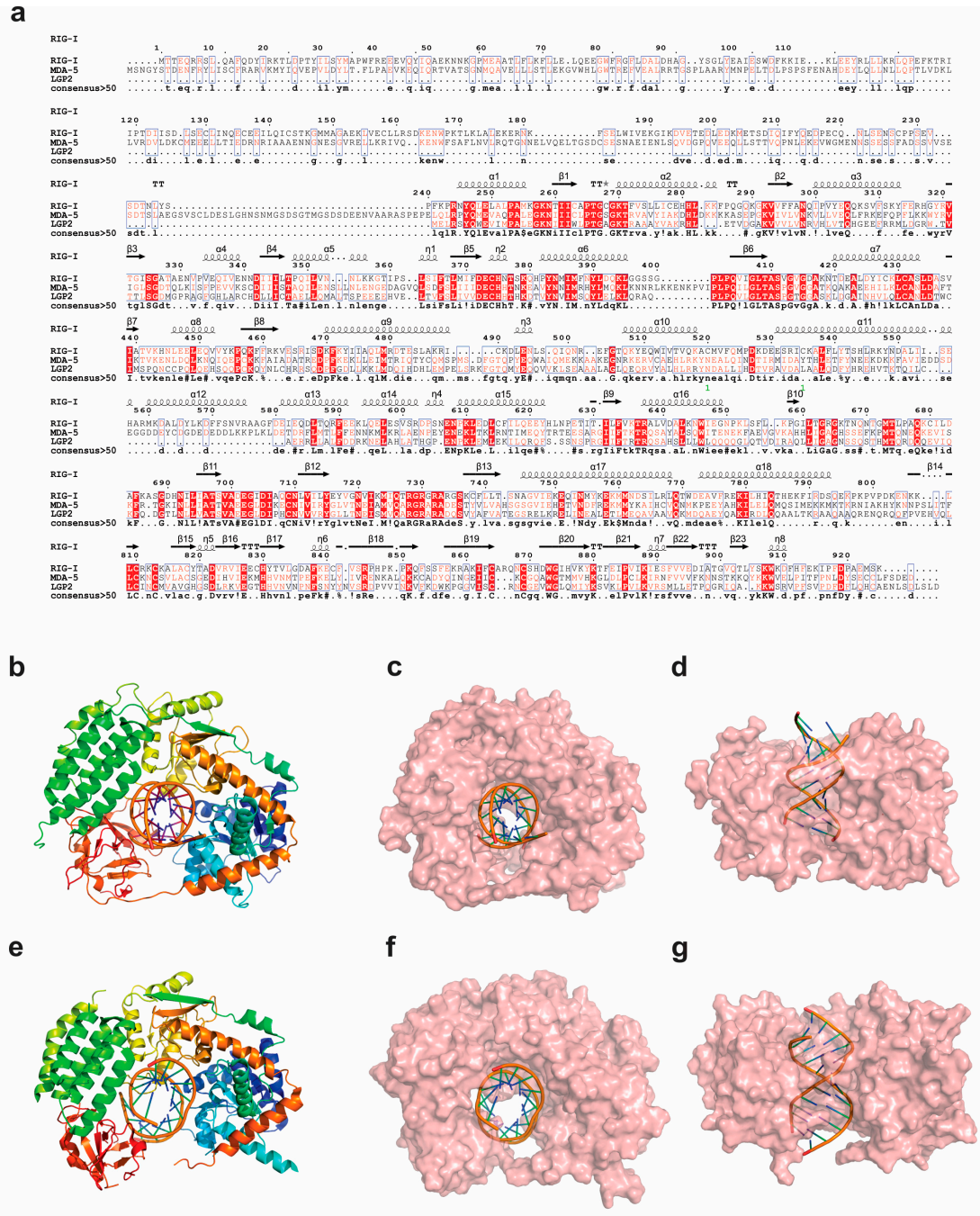


Figure S1. Human RNA sensors with helicase-like structure. **(a)** Multiple sequence alignment of human RNA sensors RIG-I, MDA5 and LGP2 proteins by the Multalin algorithm [60]. Conserved sequence regions are depicted as red boxes, and secondary structure elements of the reference core structure of RIG-I protein represented on the top of the alignment; **(b)** Ribbon representation of human RIG-I protein in complex with a synthetic dsRNA (PDB code: 3TMI); **(c,d)** Surface shape of human RIG-I in two different orientations, showing the cavity that recognizes the viral RNA and the structure of the RNA sensor bound to the terminal region of a synthetic dsRNA; **(e)** Ribbon cartoon of human MDA5 protein complexed with RNA (PDB code: 4GL2); **(f,g)** Surface representation of human MDA5-RNA complex in two orientations, showing the open protein conformation that allows MDA5 binding to any region along a dsRNA.