

# Supplementary material

## ***In silico* structural elucidation of Nipah virus L protein and targeting RNA-dependent RNA polymerase domain by nucleoside analogues**

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Nipah/1-2244 ... MADELSISD... IYPECH... SPIVSGK... ISAIEYA... QLRHNQP
Hendra/1-2244 ... MAHELSISD... IYPECH... SPIVSGK... ISAIEYA... QLRHNQP
Sendai/1-2228 ... MDGQESTQNP... IYPECH... SPIVSGK... IAQLHVLL... DVNQPYI
Measles/1-2183 ... MDSLSVNQ... ILYPEV... HD... SPIV... TNK... IVA... ILEYA... RVPHAYS
Mumps/1-2261 ... MAGLNE... ILLPEV... HD... SPIV... RYK... LFY... YILHG... QLPNDLE
NDV/1-2204 ... MAGSGPERAEHQ... ILLPEV... HD... SPIV... RYK... LFY... YILHG... QLPNDLE
HPiV-5/1-2255 ... MAGSRE... ILLPEV... HD... SPIV... RYK... LFY... YILHG... QLPNDLE
Rabies/1-2127 ... MLDPPGE... VYDDP... IDP... IELE... AEP... RGT... PIV... PNI... LRNS... DYN... LNS... SPLI... ED... AR... LML... EWL... K... GNR... PYR
VSV/1-2109 ... MEVHD... FET... DEF... NDN... FNE... DDYA... TRE... F... IN... P... D... E... R... M... TYL... LN... H... AD... Y... NL... SPLI... S... DD... I... DN... L... IR... KF... FNS... L... P... IPS... M
RSV/1-2201 ... MGSWSHPQFEK... GSGSGSSWSHPQFEK... GSGSLVPRGSM... D... P... IN... GNSAN... V... YL... T... DS... YL... K... GV... IS... F... SE... C... NA... LG... SY... I... F... NG... PYL
HMPV/1-2005 ... MDP... LN... EST... VN... V... YL... PD... SY... L... K... GV... IS... F... SE... T... NA... IG... SC... L... KR... PYL
Ebola/1-2212 ... MATQH... T... QY... PD... AR... T... SPIV... LD... QC... DL... V... TRAC... GL... Y... SS... YS
Marburg/1-2330 ... MQHP... T... QY... PD... AR... T... SPIV... LD... QC... DL... V... TRAC... GL... Y... SS... YS
HPiV-3/1-2233 ... MDTESSNGT... VSD... ILYPECH... HD... SPIV... K... GK... IA... QL... HT... IM... SL... P... Q... PYD
Rinderpest/1-2183 ... MDSLSVNQ... ILYPEV... HD... SPIV... TNK... L... V... S... I... LE... YA... R... IP... H... YV
CRV/1-2184 ... MDSVSVNQ... ILYPEV... HD... SPIV... TNK... L... V... S... I... LE... YA... R... IR... H... NYQ
consensus>70 ... di... p#... L... spiv...

SDDK... RLSEN... IRLNLHGK... RKS... LYILR... QSK... QGD... Y... I... R... NN... T... K... NLK... E... FM... H... IA... Y... P... EC... NN... I... L...
Hendra/1-2244 ... RLSEN... IRLNLHGK... RKS... LYILR... QSK... QGD... Y... I... R... NN... T... K... NLK... E... FM... H... IA... Y... P... EC... NN... I... L...
Sendai/1-2228 ... SIINIT... KHK... IRNG... GLS... LRQ... IK... IRS... LG... AL... Q... RT... K... DL... D... R... Y... TF... EP... Y... P... T... N... S... Q... E... L...
Measles/1-2183 ... TLQCN... IKH... RLK... NGF... SNQ... MI... INN... V... E... V... GN... V... I... K... SK... L... R... S... Y... P... AH... SH... IP... Y... P... N... C... N... Q... D... L...
Mumps/1-2261 ... GPLAN... QNW... KAIR... A... E... ES... QV... H... AR... L... K... Q... IR... V... EL... I... AR... P... SL... RW... T... RS... Q... RE... IA... I... AI... L... W... P... R... I... L... P... I... L...
NDV/1-2204 ... HLISR... QW... K... R... I... LES... AT... P... D... E... R... MI... K... L... G... R... AV... H... Q... T... L... NH... NS... K... IT... G... V... L... P... R... C... L... E... E... L...
HPiV-5/1-2255 ... G... L... H... N... Q... W... N... W... Q... IA... H... E... ES... N... LA... Q... R... L... V... N... V... R... N... FL... I... TH... P... DL... R... K... G... HW... Q... Y... V... V... N... N... L... W... P... R... I... L... P... I... L...
Rabies/1-2127 ... MTLT... DNC... SRS... FR... VL... K... DY... KK... V... DL... G... L... S... L... K... V... G... G... MA... Q... S... M... IS... W... LG... Y... G...
VSV/1-2109 ... W... S... KN... W... G... V... L... E... M... L... T... S... Q... M... H... M... M... G... S... W... L... MS...
RSV/1-2201 ... KNDY... TNL... SRQ... NP... L... IE... H... M... L... K... K... L... NI... T... Q... S... L... SK... Y... H... K... G... E... IK... LE... E... P... TY... F... QS... L... M... T...
HMPV/1-2005 ... KNDY... TAK... VA... IE... NP... V... IE... H... V... R... L... K... N... AV... N... S... K... M... K... I... SD... Y... KIV... EP... VN... MQ... HE... IM... K...
Ebola/1-2212 ... LNPQL... RN... CK... L... P... KH... IY... RL... K... Y... DV... T... V... TK... FL... SD... VP... V... AT... LP... ID... FI... V... LL... KA... L... SG... NG... FC... P... V... EP... R...
Marburg/1-2330 ... HNP... K... LR... N... CR... I... PH... IY... RL... R... NST... AL... KT... FL... Q... NC... SI... L... T... VP... F... H... SI... W... D... H... I... L... T... Q... Y... D... A... IN... H... V... D... F...
HPiV-3/1-2233 ... MDDD... SIL... V... IT... R... Q... IK... L... K... L... K... D... K... R... Q... S... IR... RL... K... L... IL... TE... K... V... ND... LG... KY... T... FIR... Y... P... EMS... K... E... M...
Rinderpest/1-2183 ... LEDP... TL... CK... N... IK... H... RL... D... S... G... F... SN... Q... MI... I... NN... VE... I... GN... V... V... Q... S... L... K... G... Y... P... N... HE... H... IP... Y... P... EC... N... Q... E... L...
CRV/1-2184 ... LLDT... TL... VR... NI... K... ER... I... SE... G... F... SN... Q... MI... I... NC... IE... IG... S... I... N... Q... T... L... S... Y... P... K... H... N... H... V... I... Y... P... NC... N... K... L...
consensus>70 ... d... p...

Nipah/1-2244 ... SITSQ... GMT... SK... L... DN... IM... KK... S... F... K... AY... NI... I... S... K... V... I... G... M... L... Q... N... I... TR... N... L... IT... QD...
Hendra/1-2244 ... SLKSP... GMT... SK... L... SN... IM... KK... S... F... K... AY... NI... I... S... R... KI... E... I... M... L... Q... N... I... TR... N... L... IT... QD...
Sendai/1-2228 ... RLDI... PE... IC... DK... I... RS... V... F... AV... S... DR... LT... K... EL... S... NG... F... Q... DL... W... L... N... IF... K... O... L... GN... IE...
Measles/1-2183 ... NIED... K... ES... TR... K... I... RE... L... L... K... K... G... N... S... L... Y... S... K... V... S... D... K... V... F... Q... C... L... R... D... T... N... S... R... L... G... L... G... S...
Mumps/1-2261 ... AYDL... R... QS... Q... L... P... T... V... W... E... K... L... T... Q... S... T... V... N... L... I... S... D... G... L... E... R... V... L... H... I... S... N... O... L... T... G... K... P... NL... F... T... R... S...
NDV/1-2204 ... NIEV... P... D... S... T... N... K... F... R... KI... E... K... KI... Q... I... H... N... T... R... Y... G... D... L... F... T... K... L... C... T... H... V... E... K... K... L... G... L... S... S...
HPiV-5/1-2255 ... DFKIN... D... Q... L... P... L... L... K... N... W... D... K... L... V... K... E... S... C... S... V... N... A... G... T... S... Q... I... Q... N... L... S... Y... G... L... T... G... R... G... NL... F... T... R... S...
Rabies/1-2127 ... HSES... N... R... S... R... C... IT... D... L... AH... FY... S... K... S... S... P... IE... K... L... N... L... T... L... G... N... R... G... L... R... I... P... P... E... G... V... L... S... C... L... E... R... V... D... N... A... F... G... R... Y...
VSV/1-2109 ... NHDAS... Q... S... Y... S... F... L... H... E... V... D... KE... AE... IT... F... DV... V... E... T... F... I... R... G... W... G... N... K... P... IE... Y... I... K... K... E... R... W... T... D... S... F... K... I... A... V...
RSV/1-2201 ... KSMT... S... S... Q... E... I... A... T... TN... L... L... K... I... I... R... R... A... I... B... I... S... D... V... K... V... Y... A... I... L... N... K... L... G... L... K... E... K... I... K... S... N... N... G... Q... E... D... N... S... V... I... T... T... I... K... DD... I... L... S... A... K... D... N... Q...
HMPV/1-2005 ... V... H... S... C... E... L... T... L... L... Q... F... L... T... R... S... K... N... I... S... T... L... K... L... N... M... I... C... D... W... L... Q... L... K... S... T...
Ebola/1-2212 ... CQQFL... D... E... I... K... Y... T... M... Q... D... A... L... F... L... K... Y... Y... L... N... V... G... A... Q... E... DC... V... D... E... H...
Marburg/1-2330 ... KYLL... P... S... E... L... V... K... Y... A... N... W... D... N... E... F... L... K... A... Y... L... N... K... I... G... L... D... DC... V... F... S... A... S...
HPiV-3/1-2233 ... KLHIP... G... I... N... S... K... V... T... E... L... L... K... A... D... R... T... Y... S... Q... M... T... D... G... L... R... D... L... W... I... N... V... L... S... L... A... S... K... N...
Rinderpest/1-2183 ... NARD... K... K... A... T... E... K... I... R... S... L... F... K... G... T... T... L... Y... T... K... I... S... D... K... V... C... T... C... L... E... T... A... N... S... R... L... G... L... GA...
CRV/1-2184 ... HAQDR... V... I... S... L... R... L... R... N... I... F... K... R... G... N... S... I... Y... S... K... I... T... D... G... V... K... C... L... N... D... I... N... L... N... T... I... G... L... GG...
consensus>70 ... 1

Nipah/1-2244 ... RRDE... I... NI... H... E... C... R... R... L... G... D... L... G... K... N... M... S... Q... S... K... W... Y... E... C... F... L... W... F... T... I... K... T... E... M... R... A... V... I... K... N... S... Q... K... P... K... F... R... S... D... S... C... I... H... M... R... D... K... S... T... E... T...
Hendra/1-2244 ... QKDE... V... L... G... I... Y... E... Q... D... R... L... S... N... I... G... K... Y... M... S... Q... S... Q... W... Y... E... C... F... L... W... F... T... I... K... T... E... M... R... A... V... I... K... N... S... Q... K... P... K... F... R... S... D... S... C... I... H... M... K... D... N... N... M... E... I...
Sendai/1-2228 ... GREG... Y... D... P... L... Q... D... I... S... T... I... P... E... T... E... R... Y... S... R... N... K... W... Y... R... P... F... L... W... F... S... I... K... Y... D... M... R... W... M... Q... R... T... R... P... G... G... P... L... D... T... S... N... S... H... L... L... E... C... K... S... Y... T... L...
Measles/1-2183 ... E... L... R... E... D... I... K... E... K... I... I... N... L... G... V... M... H... S... S... Q... W... E... F... F... L... W... F... T... V... K... T... E... M... R... S... V... I... K... S... Q... T... H... T... C... H... R... R... R... H... T... P... V... F... F... T... G... S... S... V... E... L...
Mumps/1-2261 ... RAGQ... V... D... V... K... D... Y... S... I... P... S... T... R... E... L... S... Q... I... W... F... N... N... E... W... S... G... V... K... T... W... L... M... I... K... Y... R... M... R... Q... L... I... T... N... Q... K... T... G... E... L... D... T... L... V... I... T... V... D... T... R... S... T... I... C...
NDV/1-2204 ... RSNN... V... P... R... S... E... E... F... S... S... I... R... T... D... P... A... F... W... F... H... S... K... W... S... R... A... F... A... W... L... I... K... Q... V... Q... R... H... L... I... V... A... A... R... T... R... S... A... V... N... K... L... V... T... L... S... H... K... I... G... H... V...
HPiV-5/1-2255 ... RELS... G... D... R... .RD... I... D... L... .K... T... V... V... A... A... H... W... D... S... D... W... K... R... I... S... D... F... W... I... M... I... K... F... Q... M... R... Q... L... I... V... R... Q... T... D... H... N... D... S... D... L... I... T... Y... E... N... R... G... I...
Rabies/1-2127 ... LANT... Y... S... S... Y... L... F... F... H... V... I... T... L... Y... M... N... A... L... D... W... I... D... E... K... T... I... L... A... L... W... K... D... L... T... S... V... S... H... G... I... D... L... V... K... F... K... D... Q... I... W... G... L...
VSV/1-2109 ... LAYL... C... Q... K... F... L... D... L... H... K... L... T... L... I... L... . . . NAVS... E... V... E... L... N... L... A... R... T... F... K... G... K... V... R... R... S... S... H... G... T... N... I... C... R... I... V... P... S... L... G... P... T...
RSV/1-2201 ... SHLK... A... D... K... N... H... S... T... K... Q... D... T... I... K... T... T... L... L... K... L... C... S... M... Q... . . . I... H... F... N... L... Y... T... K... L... N... N... I... L... T... Q... Y... R... S... N... E... V... K... N... H... G... F... T... L... I... D... N... Q... T... L... S... G... F... Q...
HMPV/1-2005 ... SD... D... . . . T... S... I... . . . L... S... F... I... D... V... E... . . . F... I... P... S... W... . . . S... N... W... F... S... N... W... Y... N... L... N... K... L... I... L... E... F... R... K... E... E... V... I... R... T... G... S... I... L... C... . . . R... S... L... G... K... I... V...
Ebola/1-2212 ... FQ... . . . . . E... K... I... L... S... S... I... Q... G... N... E... F... L... H... Q... M... F... F... W... Y... D... L... A... I... L... T... R... R... G... R... L... N... R... G... N... S... . . . . . R... S... T... W... E... V... F... H... D... D... L... I... D... I...
Marburg/1-2330 ... AR... . . . . . S... C... E... D... E... S... N... P... N... E... Y... W... G... M... L... L... V... H... L... S... Q... L... A... R... R... I... K... G... Q... R... G... S... L... . . . . . R... S... N... W... K... F... I... G... T... D... L... E... L...
HPiV-3/1-2233 ... DGSN... Y... D... L... N... E... E... I... N... N... I... . . . . . S... K... V... H... T... T... Y... K... S... D... K... W... Y... N... P... F... K... T... W... F... T... I... K... Y... D... M... R... R... L... Q... A... R... N... E... V... I... F... N... M... G... K... D... Y... N... L... L... E... D... Q... K... N... F... L...
Rinderpest/1-2183 ... D... . . . . . L... G... I... G... I... K... E... K... I... . . . . . L... S... L... S... L... Y... M... Q... S... S... Q... W... Y... E... P... F... L... W... F... T... I... K... T... E... M... R... S... T... I... K... S... V... H... T... S... R... R... Y... V... P... S... F... F... S... G... D... S... F... E... T...
CRV/1-2184 ... A... . . . . . L... D... K... T... I... G... T... K... I... . . . . . D... E... A... G... I... M... I... M... Q... S... S... Q... W... Y... E... P... F... L... W... F... T... I... K... T... E... M... R... S... V... I... K... S... S... T... H... N... C... R... R... Q... N... P... V... E... V... K... G... E... S... L... H... V...
consensus>70 ... mr...





CR-II

Sequence alignment for CR-II region (residues 470-520) across various viruses including Nipah, Hendra, Sendai, Measles, Mumps, NDV, HPIV-5, Rabies, VSV, RSV, HMPV, Ebola, Marburg, and Rinderpest. Consensus sequence is shown at the bottom.

CR-II

Sequence alignment for CR-II region (residues 530-600) across various viruses including Nipah, Hendra, Sendai, Measles, Mumps, NDV, HPIV-5, Rabies, VSV, RSV, HMPV, Ebola, Marburg, and Rinderpest. Consensus sequence is shown at the bottom.

CR-III

Sequence alignment for CR-III region (residues 610-680) across various viruses including Nipah, Hendra, Sendai, Measles, Mumps, NDV, HPIV-5, Rabies, RSV, HMPV, Ebola, Marburg, and Rinderpest. Consensus sequence is shown at the bottom.

CR-III

Sequence alignment for CR-III region (residues 690-760) across various viruses including Nipah, Hendra, Sendai, Measles, Mumps, NDV, HPIV-5, Rabies, RSV, HMPV, Ebola, Marburg, and Rinderpest. Consensus sequence is shown at the bottom.



CR-III

770 780 790 800 810 820 830 840
Nipah/1-2244 NCPPNIDK.HMELEKTPEDDDIFIHYPKGGIEGYSOKTWTIATIPFFLFLSAYETNTRI...
Hendra/1-2244 NCPDIDGK.HINLDDTPEDDDIFIHSPKGGIEGYSOKTWTIATIPFFLFLSAYETNTRI...
Sendai/1-2228 YCFVADRM.HRQLQDHADSGIFIHNPGRGGIEGYSOKLWTLISISAIHLAAVRVGVRSAMVOGDNQAI...
Measles/1-2183 HCPPDLDA.HVPLCKVPNDQIFIKYPMGGIEGYSOKLWTLISIPYLYLAAYESGVRIASLVOGDNQAI...
Mumps/1-2261 FNPSPDPT.QLDLDTALNDDIFIVSPRGGIEGLCKLWTFMISISTIILSATEANTRVMSMVOGDNQAI...
NDV/1-2204 FNPSPDPT.DCDLSRVPNDIIYIVSARGGIEGLCKLWTFMISIAAIIQLAAARSHCRVACMVOGDNQAI...
HPiV-5/1-2255 FNPSPDPT.QFDLQKVINDDIFIVSPRGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
Rabies/1-2127 SDLILGLREDQIYCLDASNGPTCWNGQDGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
VSV/1-2109 PDLMRVHNNTL.LINSTSQRVCGWQOEGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
RSV/1-2201 HAPPYIGDHIVLNNVDEQSGLYRYHMGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
HMPV/1-2005 HAPPETKG.EYDIDKIEEQSGLYRYHMGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
Ebola/1-2212 YNPPHNLTL.ENRDNPPPEGSSYRGHMGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
Marburg/1-2330 YSPPHCVT.EDNRNNPPDCANAYHYHLGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
HPiV-3/1-2233 YCPSPDKE.HISLEDHPDSGFYVHNPRGGIEGLCKLWTFMISIAAIIQLSATESGTRVMSMVOGDNQAI...
Rinderpest/1-2183 HCPDLDL.HVNLDNVPNDQIFIKYPMGGIEGLCKLWTFMISIPYLYLAAYESGVRIASLVOGDNQAI...
CRV/1-2184 HCPPDLDL.HVDLNTAPNSQIFIKYPMGGIEGLCKLWTFMISIPYLYLAAYESGVRIASLVOGDNQAI...
consensus>70 ..pp.....d.d...n.....GGiEG..OK.Wt...i...l.....i..lvqGDN#.i.v...v.....

CR-III

850 860 870 880 890 900 910 920
Nipah/1-2244 ...KVKKEICAKQAQLYFERLRMNLRALGHNLKAETIIS...
Hendra/1-2244 ...KVKKEICARQAQLYFDRLRMNLRALGHNLKAETIIS...
Sendai/1-2228 ...KQKKNHYVEEITRYFGALRHVMFDIGHELKLN...
Measles/1-2183 ...NLKREAAARVTRDYFVILRQLRGLGHLKAN...
Mumps/1-2261 ...SEKKEQAYKASKLFFERLRANNHGIHHLKE...
NDV/1-2204 ...DMVLTQLHQASDNFFKELIHVHNLIGNLKE...
HPiV-5/1-2255 ...LEKKTIAFRSCNLFPERLKCNNFGLGHLKE...
Rabies/1-2127 EGLLYELERISRNALSITYRAVEGASKLGLTIK...
VSV/1-2109 VELQGLANQMSVSNNEKIMTAIKIGTGKLDL...
RSV/1-2201 ...THAQA.DYLLALNSLKLLEYKAYAGIGHLKE...
HMPV/1-2005 ...DEVKA.DYSLAVKMLKEIRDAYRNIHGLKE...
Ebola/1-2212 ...DEQEQAEDNAARVAASLAKVTSACGIFLKR...
Marburg/1-2330 ...DYQENEAELNARVAVELAITTGYSGIFLKP...
HPiV-3/1-2233 ...RVKKEIVYKDVVRFNLSREVMDLGHHLKAN...
Rinderpest/1-2183 ...HLKKEAARVTRDYFVILRQLRGLGHLKAN...
CRV/1-2184 ...ALKKSEAARVTEYFIALRQLRHDVGHHLKAN...
consensus>70 .....l.....G..lk..Et.is.....ysk.i..dg...q.lk...r.....e..de...

930 940 950 960 970 980
Nipah/1-2244 ACSNISITIAKA.....IENGLSRNVGYCINILKVI...
Hendra/1-2244 ACSNISITIAKA.....IENGLSRNVGYCINILKVI...
Sendai/1-2228 ACSNISITIAKA.....IENGYSPILGYCIALYKTC...
Measles/1-2183 ACSNIATIMAKS.....IERGYDRYLAYSILNVLKV...
Mumps/1-2261 SCSNLATTVMRL.....TENGEKDLCLYFNAMFTI...
NDV/1-2204 SCANIATVVARL.....CENGLPKDFCYLYNLMSC...
HPiV-5/1-2255 SCSNLATTVMRL.....TENGEKDFCYLYNLMSC...
Rabies/1-2127 NLANIMSTVSNALTVAQHSQSLKPKM..RDFLLMSVQ...
VSV/1-2109 TCANIMSSVSNALTVAHFAENINAM..IQYNYGTF...
RSV/1-2201 SLESIGSITQEL.....EYRGESLCLSLFRNVWLYNQIALQLKNHALCENK...
HMPV/1-2005 SAESIGSITQEL.....EYRGESLCLSLFRNVWLYNQIALQLKNHALCENK...
Ebola/1-2212 TLASIGTSAFERS.....ISETRHIFPCRTIAAFHTF...
Marburg/1-2330 SLASIGTSAFERG.....TSETRHIFPSPRWIASFHSM...
HPiV-3/1-2233 ACSNLATSFAKA.....IENGYSPVLGYACSFINKI...
Rinderpest/1-2183 ACSNIATTIKAS.....IERGFDRYLAYSILNVLKV...
CRV/1-2184 ACSNISITLAKA.....IEKGFDRYLAYSILNVLKV...
consensus>70 .....ni.....e.g.....f.....

CR-IV

990 1000 1010 1020 1030 1040
Nipah/1-2244 WLITAAALIPAPIGGFNYNLNSRIEVRNIGDPVTASLADLKRMI...
Hendra/1-2244 WLVTASRIAPAPIGGFNYNLNSRIEVRNIGDPVTASLADLKRMI...
Sendai/1-2228 WLRCAVLIPANVGGFNYSMTSRCEVRNIGDPVAAALADLKRMI...
Measles/1-2183 LLIRMALLIPAPIGGFNYNLNSRIEVRNIGDPVTSSADLKRMI...
Mumps/1-2261 LISRLCLLPSQLGGLNLSLCSLFRNIGDPLVSAIADVKR...
NDV/1-2204 FVHSYVLTIPAQGLGGLSNLQYSRLYTRNIGDPGTAF...
HPiV-5/1-2255 LVSRALALIPSQLGGLNLSLCSLFRNIGDPLVSAVADLKR...
Rabies/1-2127 AMSRIIYLDPSLGGISGMSLGRFHRQFSDPVS...
VSV/1-2109 FKYAMLILDPSIGGVSMSLSRFLIRAFPDPVTE...
RSV/1-2201 ALLTLMNLPMLFGGDPNLLYSRFRRTPLTEAIVHSV...
HMPV/1-2005 VVDLWMNLPMLFGGDPVVFYRSFRRTPLTEAIVHSV...
Ebola/1-2212 TISLALAVPQVLGGLSFLNPEKCFYRNIGDPLVSG...
Marburg/1-2330 EKLIALIPQVLGGLSFLNPEKCFYRNIGDPLVSG...
HPiV-3/1-2233 WMQYASLIPASVGGFNYSMTSRCEVRNIGDPSV...
Rinderpest/1-2183 LLIRMALLIPAPIGGFNYNLNSRIEVRNIGDPVT...
CRV/1-2184 LLTKMALLIPAPIGGFNYNLMSRFLIRAFPDPVTE...
consensus>70 .....p...GG...l...r.f.Rn..Dp...d.k.....GVEILH.QVM...pgd...

RdRp PRNTase CD MTase CTD

CR-IV

1050 1060 1070 1080 1090 1100 1110
Nipah/1-2244 . . . . . ASFLDWASDPYSGNLPDSQSITKTIKNITARTILRNSPNMLKGLF... HDKSFDELELASFLMDRRVILPRA
Hendra/1-2244 . . . . . ASFLDWASDPYSGNLPDSQSITKTIKNITARTILRNSPNMLKGLF... HDKSFDELELASFLMDRRVILPRA
Sendai/1-2228 . . . . . SSFLDWASDPYSCNLPDSQSITTIKKNITARSVLQESPNPLSGLF... TETSGEEDLNLASFLMDRDKVILPRV
Measles/1-2183 . . . . . SSFLDWASDPYSANLVCVQSITRLKKNITARFVLHSPNMLKGLF... HDSKSEDERLAAFLMDRHIIVPRA
Mumps/1-2261 . . . . . GWSTLADDPYTLNIDYLVPSKTFLLKHAQYITMERSVNPMLRGVVF... SENAAEEELAQYLLDREVMPRV
NDV/1-2204 . . . . . GDWASLNDPPYSFNFETVASPSIVLKKHTQKVLFEETCSNPLSGVH... TEDNEAEEKALAEFLLNQEVIPRV
HPiV-5/1-2255 . . . . . GSWATLADDPYSINIEQYPTTALKRHTQOALMELSTNPMRLGIF... SDNAQEEENLARFLDREVIFPRV
Rabies/1-2127 LGERTLESFTRLLLEDPITLNIIRGGASPTILKDAIRKALY... DEVDKVENSEFREAILLSKTHRDNFILFLISVEPLPRPF
VSV/1-2109 IAKFRITHIDKLVEDPTSLNIAMGMSANLKTTEVKKCLTESRQIRNQVIKDATTIYLHEEDRLRSFLWSINPLPRPF
RSV/1-2201 . . . . . AEFTVLMRDEQALGSERQAKITSEINRLAVTEVLTSTAPNKIFSKSA... QHYT.TTEIDNDIMQNIETPYPHG
HMPV/1-2005 . . . . . ATLTLMRDPQAVGSEERQAKVTSDDINRTAVTSLSLSPNQLFSDSA... IHYS.RNEEVGDIADNITPVYPHG
Ebola/1-2212 . . . . . CTALIDFVLEPESGLNVPQSQDLSFTLRQIVRRTITLSAKNKLTNTLF... HASADFEDEMVCWLLSSTPVMRSRF
Marburg/1-2330 . . . . . ADASDFVMNPELGLNVPQSKEIITFLRQIVRRETTITSONRIINSLF... HIGSDFEDQRVCEWLLSSNPVMSRF
HPiV-3/1-2233 . . . . . SSFLDWASDPYSCNLPDSQSITRLKKNITARVQLQDSPNPLSGLF... TNTMIEEDEELAEFLMDRDKVILPRA
Rinderpest/1-2183 . . . . . SSFLDWASDPYSANLVCVQSITRMLKNITAKYVLINSPNMLRGLF... HDSKSEDEQLATFLMDRDKVILPRA
CRV/1-2184 . . . . . SSFLDWASDPYSANLVCVQSITRLKKNITARHVLINSPNMLRGLF... HDESQDEEALAAFLMDRDKVILPRA
consensus>70 . . . . . #P...n...t...k...s.#.m...f...ed..l..flmd...i.pr.

CR-V

1120 1130 1140 1150 1160 1170 1180 1190
Nipah/1-2244 AHEILDNSLTGAREETAGLLDTTKGLIRSGRLKSGLQPKLVSRSSHHDYDQFLIL... NKLLSN... RRQNDL IISS.NTCS
Hendra/1-2244 AHEILDNSLTGAREETAGLLDTTKGLIRSGRLKSGLQPKLVSRSSHHDYDQFLIL... NKLLSN... KRRNDL IISP.KTCS
Sendai/1-2228 AHEILDNSLTGAREETAGLLDTTKGLIRSGRLKSGLQPKLVSRSSHHDYDQFLIL... NKLLSN... PVKNDL IEYE.YMCS
Measles/1-2183 AHEILDHSGVARGESIAGMLDTTKGLIRASMRKGGLLTSRVITRLSNYDYEQFRAG... MVLLTG... RKRNVL IIDK.ECS
Mumps/1-2261 AHVILAQSSCGRRKQIQGYLDSTRITIRYSLEVRPLSAKKNLTVIEYNLLYLSY... NLEIIEKPNIVQPFLNAINV.DTCS
NDV/1-2204 AHAIMESASVGRKQIQGLVDTTNTVIKIALTRRP LGVKRLMRIINYSMMHMLFRDDIFLNSR... SNHPLVSS.NMCS
HPiV-5/1-2255 AHITIEQTSVGRKQIQGYLDSTRITIRYSLEVRPLSAKKNLTVIEYNLLYLSY... NLEIIEKPNIVQPFLNAINV.DTCS
Rabies/1-2127 LSEFLFSSFLGIPESIIIGLIQNSRTIRQFRKSLSKTELESFYNSSEIHG... I...SRMTQT...PQR...VGGV.WPCT
VSV/1-2109 LSEFLKSGSVTFLGVADGLISLQNSRTIRNSFKKKYHRELLDLELIVRSEVSS... L...THLGLK...HLRRGSCKM.WCT
RSV/1-2201 LRVVYESLFFYKAEKIVNLSISGKTSITNILEKTSAILDITDIDRAEMMRKNITLL... IRILPLDCNRDREILSMENLSI
HMPV/1-2005 LRVLYESLFFHKAEEKVVMNISGKTSITNLLQRTSAINGEDIDRAVSMMLNGLGL... SRILSVVVDISIEIPTKSNRGLIC
Ebola/1-2212 AADIFRSRTPSGKRLQILGYLEGTRITLASKIINNTETPVLDRLRKITLQRWSLW... FSYLDH.CDNILAEALTQ.ITCT
Marburg/1-2330 AADIFRSRTPSGKRLQILGYLEGTRITLASKIINNTETPVLDRLRKITLQRWSLW... FSYIDA.LDDDLSESLK.FTCT
HPiV-3/1-2233 AHDLIDNSLTGIRNATAGMLDTTKGLIRVGNRRGGLTYSLMRLKISNYDLVQYETL... SRTLRL...IVSDKTRYE.DMCS
Rinderpest/1-2183 AHEILDHSGVARGESIAGMLDTTKGLIRTSRRRGGLLTRVITARLSTYDYEQFRSG... MVLLTG...SKRNVL IIDR.DSCT
CRV/1-2184 AHEILDNSLTGAREETAGLLDTTKGLIRASMRKGGLLTPRITRLSTYDYEQFRAG... IRLFSG...KGHDQL IIDQ.DSCT
consensus>70 a..i...g.r..i.g.l.d.t...l.p.r.i.e.g...c

CR-V

1200 1210 1220 1230 1240 1250 1260
Nipah/1-2244 VDLARALRSHMWRELAALGRVIVYGLVPEADLEAMVGRYITGSLEQCICEQ...GNTMYGWFFVPRDSDLDQVDRE...
Hendra/1-2244 VDLAKARLCHMMWRDLALGRSIVYGLVPEADLEAMTGRYITGSMECQLCDQ...GNTMYGWFFVPRDSDLDQVKNK...
Sendai/1-2228 VELAVGLRQKMMWHLTYGRPIHGLTDPDLLELRGTFIEGSEVCKLCSRSEGADPIYTFWFLPNDLDDTLTNG...
Measles/1-2183 VQLARALRSHMWARLARGRPIYGLVPEADLESMRGHLIRRHETCVICEC...GSVNYGWFFVPSGGCQLDDIDKE...
Mumps/1-2261 IDIARSLRKLSSWATLNLGRPIEGLETDPDLLELVGHCLITIGSDECEHCSS...GDDKFTWFFLPKGIRLDNDPAS...
NDV/1-2204 LTLADYARNRNSWSPITGRKILGVSNPDTIELVEGEILSVSGGCTKCD...GDQFTWFHLPNSIELTDDTSK...
HPiV-5/1-2255 IDIARNLRKLSWAPLGRNLEGLTDPDIETAGALIVGSGYCEQCAA...GDNRFWFFLPVSGIEIGDPRD...
Rabies/1-2127 SERADLREISW...GRKVVGHVPHPSM.LGLLPKSSSICCTGATGG...EEMVYI...GPNR
VSV/1-2109 ATHADTIRYKSW...GRTVIGHTVPHPLM.LGPOHRRKETPCAPN...GPNY
TELSKYVRERSWSL...SNIVGVTSPSIVMTMDIKYITSTISSGII...EKNVNSLTRG...
HMPV/1-2005 QISRTIRETSWNN...MEIVGVTSPSITCMDVIYATSSHKGI...EKFSDRTRTG...
Ebola/1-2212 VDLAQILREYSWAHILEGRPLIGATLPCMIEGRQVFVWILKPYEQ...CSNA...KQPGGKPF
Marburg/1-2330 VDVANFLRAYSWSDVVKGRKLIATLPCLEQFEVKNLSEDLREQFNLSSDSKSTINLLPYDCKELRELSNDTELNY
HPiV-3/1-2233 VDLAIALRQKMMWHLTYGRPIHGLTDPDLLELLESGHVITGSEHCICLYSSDGTNPYTWMMFLPNKIKGDSABTG...
Rinderpest/1-2183 VQLARALRSHMWARLARGRPIYGLVPEADLESMRGHLIRRHETCVICEC...GSVNYGWFFVPSGNCQLDDIDRE...
CRV/1-2184 VQLARALRSHMWAKLAKGRPIYGLVPEADLESMKGYMIRRHESCLLCAS...GSVNYGWFFIPANCQLDSDITEG...
consensus>70 .d.a..1R...W...gr.i.G...P...e...g...c

CR-V

1270 1280 1290 1300 1310 1320
Nipah/1-2244 . . . . . HSSIRVPPYVGSSTDERSDIKLGNVKRPP...TKALRSATRIATVYTWAYGDNEECWYEAWYI
Hendra/1-2244 . . . . . HSSIRVPPYVGSSTDERSDIKLGNVKRPP...TKALRSATRIATVYTWAYGDSEESWYEAWYI
Sendai/1-2228 . . . . . SPAIRIPYVGSATDERSEALGLYVNL...SKPAAAIIRIAMVYTWAYGTDEISWMEAAILI
Measles/1-2183 . . . . . TSSLRVPPYVGSSTDERTDKMLAFVRAP...SRSLRSAVRIATVYSWAYGDDDSWNEAWLL
Mumps/1-2261 . . . . . NPPIRVPPYVGSSTDERRVASMAIYKGA...SVSLKSALRLAGVYIWAFGDTEESWQDAAYLV
NDV/1-2204 . . . . . NPPMPPVYVGSSTDERRAASLAKIAHM...SPHVKAALRASVLTWAYGDNEVNWTAALYN
HPiV-5/1-2255 . . . . . NPPIRVPPYVGSSTDERRVASMAIYRGA...SSSLKAVLRLAGVYIWAFGDTELENWIDALDL
Rabies/1-2127 VSVSVL...PSFQDSFFSRGP LKGYLGSSTSMSTOLF HAWEKVTN...VHVVKRAL LKESINWFIITRDSNLAQALIR
VSVHCP...DGIDHVFSSRGP LPAYLGSSTSESTSLHAWPERESK...VPLIKRATRLRDAISWVFPEDSKLAMTILS
RSV/1-2201 . . . . . ERGPTKPVVGSSTQEKKTMPVYNRQL...TKKQRDIDLLAKLDVWYASIDNKDFMEEL
HMPV/1-2005 . . . . . QRGPKSPWVGSSTQEKKLVPPVYNRQL...SKQREOLEALAKLMRWWYKGTPLGRRLLNKI
Ebola/1-2212 VSVAVKHHIVSAWPNASRISWTIGD GIPYVGSSTEDKIGOPAIKPKCP...SAALREALEASRLT...VVTQGSNSDLLIKPF
Marburg/1-2330 VSCALDRKVVQKHPVSNRLAWTIGNRAPPYVGSSTEDKIGVPLRVNCP...SAALKEAEMVSRLLWVTQGTADREKLLIPL
HPiV-3/1-2233 . . . . . TSSLRVPPYVGSSTDERSEALGLYIKNL...SKPAAAIIRIAMYTWAFGNDEISWMEAASQI
Rinderpest/1-2183 . . . . . TSSLRVPPYVGSSTDERTDKMLAFVKS...SRTLRSAVRIATVYSWAYGDDDKSWNEAWLL
CRV/1-2184 . . . . . TSSLRVPPYVGSSTDERTDKMLAFVKS...SRSLKSAVRIATVYSWAYGDDDSWQEAWYI
consensus>70 . . . . . py.GS.Tde...a...W.y...



CR-V

Multiple sequence alignment for CR-V region (residues 1330-1390) across various virus strains like Nipah/1-2244, Hendra/1-2244, Sendai/1-2228, etc., showing conserved motifs like HRL and RDST.

[Redacted Section]

Multiple sequence alignment for a region (residues 1400-1470) across various virus strains, highlighting conserved motifs such as HLHV and CCV.

Multiple sequence alignment for a region (residues 1480-1530) across various virus strains, showing conserved motifs like VLA and AQT.

Multiple sequence alignment for a region (residues 1540-1600) across various virus strains, highlighting conserved motifs such as VLA, AQT, and GFT.



1610 1620 1630 1640 1650 1660
Nipah/1-2244 TQGF...YLHQQDFEKLSQLNLLVTSYMIYLMNW..CDF..KKSPFLIAEQDETVI...SLED
Hendra/1-2244 TQGF...YLHQQDFEKLSQLNLLVTSYMIYLMNW..CDF..KKSPFLIAEQDEAVV...ELRED
Sendai/1-2228 YVGF...NLSNQDKTLLALSVCYEVSDLFMHDWQGG...VPLEVFICDNDPDDVA...DMRRS
Measles/1-2183 IHGF...SLDAQNLHHTVVCNMVYTCYMTYLDLLLNEEL..EFTFLLCESDEDV...PDRFD
Mumps/1-2261 INSP...HIASLDYTKLSIDAVMWGKQVLTNISQGG...IDYEIVVPPSESQTL...SDRVL
NDV/1-2204 DGSH...QLADIDFVEVSAKLLVSCTRRVVSGLYAG...NKYDLLFPVSLDDNL...NEKML
HPiV-5/1-2255 LNAF...HFASLDYIKMSVDAILWGCKRVTNVLSNG...GDLELVVTSSEDSLIL...SDRSM
Rabies/1-2127 VSGV...ISYI...LLRLDNHPSLYI...IDKLSVSPFFLS...
RSV/1-2109 VYGG...LIYI...IDKLSVSPFFLS...
RVK...CH.S...FKLWFLKRLNVAE...
HMPV/1-2005 SLVG...YI.G...FKNWFIEQLRSAA...
Ebola/1-2212 IYIGGAAGDRGLSDAARLFLRTSISFSLTFVKEWIINRGITVPLWIVYVPLEGQNPPTVNNFLYQIVLELLVHDSRRQAFK
Marburg/1-2330 LMLGGSAGEKSSSDAVRLFLTASYQNFINNESCLMKKGGSSLPVWLYFPSEGOQLKPKILKILQRLSDLLSPDKIQKRKI.
HPiV-3/1-2233 IYGF...NTASDQDKLALSICIEYSLDLFMREWLNG...VSLEIYICDSDEVA...NDRKQ
Rinderpest/1-2183 IHGF...SLDTQNLHITVCNMICYMTYLDLLLNEEL..DEFTYLLCESDEDIV...ADRFD
CRV/1-2184 VHGP...SLDSQNLHITVCNLIYNCYMIYLDLLLNEEL..DDFSFLLCESDEDVI...PERFD
consensus>70 d

1670 1680 1690 1700 1710 1720
Nipah/1-2244 IITSKHLCVIIDLYANHHKPPWIIDLNPO...EKICVLRDFISKSRHV...DT...SSRSWNTSDLDL..
Hendra/1-2244 IITSKHLCAIIDLYANHHKPPWIIDLNPO...EKICVLRDFISKCRHT...DV...SSRSWNITDLDL..
Sendai/1-2228 SFLARHLAYLCSLAEISRDPRLRESMNSL...ERLETLKSYLELTFLD...DP...VLRYSQLTGLV..
Measles/1-2183 NIQAKHLCVLADLYCQPGTCTIRGLRPV...EKCAVLRDHIKAEARL...SP...AGSSWNIPPII..
Mumps/1-2261 NLVARKLSLLAIWANYNYPPKVKGMSPE...DKCOALTTHLLQTVVEY...VEHIQI...EKTNIIRRMIEPK..
NDV/1-2204 QLISRLLCCLYTVLFAATTREIPKIRGLSAA...EKCSILTEYLLSDAVK...PLLRPE...QVSSIMSPN..
HPiV-5/1-2255 NLIARKLTLLSLIHHNGLELPKIKGFSPPD...EKCFALTEFLRKVVNS...GLSSIE...NLSNFMYNVENPR..
Rabies/1-2127 MLRREPSLRGEIFSIPOKIPAAAYPTTMK...EGNRSILCYLQHVLRV...EREIITA...SPENDWLWIFSDFRSA..
VSV/1-2109 LTRSGPIRDELETIPHKIPTSYPTSNR...DMGVIVRNY...FKY...QCRLEKGYRSHYSQWLWLFSDVLSI..
RSV/1-2201 FTVCVWVNIIDYHP...THMKAITLYIDLVRMGLINDRIH...IKNKHKFN..
HMPV/1-2005 LHEVFWIUNAEGDL...VEIKSIKIYQLIEQSLFLR...I..
Ebola/1-2212 TTISDHVHP.HDNLVYTCKSTASNFFHASLAYWRSRHRNSNRKYLARDSST...GS...STNNSDGHIERSQ..
Marburg/1-2330 LADTCCPIGSFWVYPSKSTRNHYASLNYWRDKANKVKNTPFPHLINCSPFEPSSHT...SSVSSNQVTSNK..
HPiV-3/1-2233 AFISRHLFSVCCLAETASFGPNLNLTYL...ERLDLLKQYLELNIKE...DP...TLKYVQISGLL..
Rinderpest/1-2183 NIQARHLCVLSDLYCNPRGCPTRRGLQPV...EKCAITMKHIEAEAKL...SL...AGPSWNIGPIV..
CRV/1-2184 NIQARHLCILSDLYCNPRDCPQIRGLTPT...QKCAVLSGYLEKSKALE...SH...VGLTWNDKPIL..
consensus>70 p e y

1730 1740 1750 1760 1770
Nipah/1-2244 FVIFFYASLTYL...RRGIKQLRIRQ..VT.EV..IDTTTMLRDNIVENPPIK...TGVLD...
Hendra/1-2244 FMVFFYASLTYL...RRGIKQLRIRQ..VT.EV..IDTTTMLRDNILVENPPIK...TGVLD...
Sendai/1-2228 IKVFFPSLTYI...RKSSIKVLRTRGIGVP.EV..LEDWDPEDADNALLDGAIAEQNIPLGH...
Measles/1-2183 VDHYSCLTYL...RRGSIKQLRIRV..DP.GF..IFDALAEVN...VSOQPK...VGSNN...
Mumps/1-2261 LTAYPSNLTYL...SRKLLNARIRDSSEGGF.LIASYNSFGYLEPILMESKIFNLSSSESASL...
NDV/1-2204 IITFPANLYYM...SRKLSNLREREDRDT.LLSLFFPQEPLEBLR...PVRDIGARVKDPFTR...
HPiV-5/1-2255 LAAFASNNLYL...TRKLLNSIRDTESGQV.AVTSYYESLEYIDSLKLTTPHVPGTSCIEDDSL...
Rabies/1-2127 KMTYLSLTYO...SHLLQRVERNLSKSM...RDNLRLQSSLMRQVLGGHGED...
VSV/1-2109 DFI..GPFPSIS...TLLQLLYKPFBSGKD...KNELRELANLSSLRSGEGWE...
RSV/1-2201 DEFYTSNLGYIINYNSDNTHLTKHRIANSELENNYKLYHPTPELENILANPIKSNDDKKT...LNDYCIGKN
HMPV/1-2005 TVLNLYTDMAHALTRLIRKKL...M.CDNALLTPIPSPMVNL...
Ebola/1-2212 EQ...T...TR...D.PHDGTE...RNLVLQ...MSHEIK...
Marburg/1-2330 YIVYPENITEI...NAR...TRLINYGST.ALQGMDTKMPLESEQNLVENCRPSEGIRFKDNQKITKHDQRCERE
HPiV-3/1-2233 IKSFPSLTYV...RKTAIKYLRIRGISPP.EV..IDDWDPIEDENMLDNIVKTINDNCNKDNKG...
Rinderpest/1-2183 IDHFSSLTYL...RRGSIKQLRIRV..DP.GF..IFEALTVTD...PKPN...FQHEQ...
CRV/1-2184 IDQYSCSLTYL...RRGSIKQLRIRV..DP.GF..ITDAVGCLE...RRPLR...NNSTS...
consensus>70 f y r

1780
Nipah/1-2244 IR...GCIYY...NLEETLSMN...
Hendra/1-2244 IR...GCIYY...NLEETLSMN...
Sendai/1-2228 QT...RAPFWGLRVSKS...QVLRLRGYE...
Measles/1-2183 IS...NMSIKDFRPHD...DVAKLTKDI...
Mumps/1-2261 TE...FDFILNLELSE...ASLEKYS...
NDV/1-2204 QP...ASFIQELDLSAP...ARYDAFT...
HPiV-5/1-2255 CT...NDYIIWIIIESN...ANLEKYP...
Rabies/1-2127 TLESDDNIQRLLKDSLRRTRWVDQEVRAHARTMTGDYSPNKK...VSRKVGCS...
VSV/1-2109 DIHVK...FFTKEI...LLCPPEIRHACK...FGIAKD...NNKMSYP...
RSV/1-2201 V.DSIMPLLS...NK...KLIKSS...AMIRTNYSKQDLYNLFPMVVIDR...IDHS...
HMPV/1-2005 T...QVI...DTEQLAYFPKITFER...KNYD...
Ebola/1-2212 RTTIPQEN...THQGPSFQSFLSDSACGT...ANPKLNFDRSR...HNVKFO...
Marburg/1-2330 SSPQQMFPEDNMQTPAHIHSSPQILIKSL...DAHEDFASKII.LNSEINNLNTEYTLNTKLL
HPiV-3/1-2233 NK...INNFWGLALKNY...QVLKLRISIT...
Rinderpest/1-2183 AA...DMHISNFRPPYD...GVAELGTI...
CRV/1-2184 KA...SELTSGFDFPKD...DLAKLTSQL...
consensus>70



Table with columns RdRp, PRNTase, CD, MTase, CTD. Rows include Nipah/1-2244, Hendra/1-2244, Sendai/1-2228, Measles/1-2183, Mumps/1-2261, NDV/1-2204, HPIV-5/1-2255, Rabies/1-2127, VSV/1-2109, RSV/1-2201, HMPV/1-2005, Ebola/1-2212, Marburg/1-2330, HPIV-3/1-2233, Rinderpest/1-2183, CRV/1-2184, consensus>70.

CR-VI

Table with columns 1810, 1820, 1830, 1840, 1850, 1860, 1870, 1880. Rows include Nipah/1-2244, Hendra/1-2244, Sendai/1-2228, Measles/1-2183, Mumps/1-2261, NDV/1-2204, HPIV-5/1-2255, Rabies/1-2127, VSV/1-2109, RSV/1-2201, HMPV/1-2005, Ebola/1-2212, Marburg/1-2330, HPIV-3/1-2233, Rinderpest/1-2183, CRV/1-2184, consensus>70.

Table with columns 1890, 1900, 1910, 1920, 1930, 1940, 1950. Rows include Nipah/1-2244, Hendra/1-2244, Sendai/1-2228, Measles/1-2183, Mumps/1-2261, NDV/1-2204, HPIV-5/1-2255, Rabies/1-2127, VSV/1-2109, RSV/1-2201, HMPV/1-2005, Ebola/1-2212, Marburg/1-2330, HPIV-3/1-2233, Rinderpest/1-2183, CRV/1-2184, consensus>70.

Table with columns 1960, 1970, 1980, 1990, 2000, 2010, 2020. Rows include Nipah/1-2244, Hendra/1-2244, Sendai/1-2228, Measles/1-2183, Mumps/1-2261, NDV/1-2204, HPIV-5/1-2255, Rabies/1-2127, VSV/1-2109, RSV/1-2201, HMPV/1-2005, Ebola/1-2212, Marburg/1-2330, HPIV-3/1-2233, Rinderpest/1-2183, CRV/1-2184, consensus>70.

RdRp PRNTase CD MTase CTD

2030 2040 2050 2060 2070 2080
Nipah/1-2244 QK...VLEHSNLHDEV...NDQGI...TSVIFKIKNSQSKQFHDDLKYYQIDQFFVPTKIT
Hendra/1-2244 QK...VLDHSYLSDEIN...NDQGI...TSVIFKIKNIOQSKQFHEDLVKHYQVEQFFVPSHIT
Sendai/1-2228 KT...VLASLHPLSKE...SFKI...EKWILIEKAKAHEWVTR...ELREGSSSSGMLR
Measles/1-2183 EK...IKQQTIESSVR...SPGL...IGHILSIKQLSCIQAIIVGAVSR...GDINPILKLT
Mumps/1-2261 SS...FTTALNRARTLN...EQGFSLIPPELVSEYWRRRVEQGGQI IQDCIDKVI SEC...VRDQYL
NDV/1-2204 TF...VHEVVRMAKTL...QRHGTTLLSKSDEITLTKLFTSQRRVTDILSSPLPKL...MKLLRE
HPiV-5/1-2255 QT...VSQATGMAMTL...DQGFLLISPERINQYWDGHLKQERIVAEADKRVVLGE...NALFNS
Rabies/1-2127 YLTSSTLREMSLVLFNCSSPKSEMQRARSLNYQDLVRGFPPEI...ISNPYN
VSV/1-2109 P.DWSSINESWKNLYAFQSSSEQEFARAKKVS...YFTTLTGIP SQF...IPDPFV
RSV/1-2201 NV...VQNAKLILSR...KNFI...MPKKADK...
HMPV/1-2005 GE...IQNSKMKIADV...NDFY...AAKKLDN...
Ebola/1-2212 HQNHLS...CKQVILTALQL...QIORS...PYWLSHLTQYADCELHL...
Marburg/1-2330 FSDQV...GIFLICKAMSR...RQAI...PYWLKHEKNYPASLHE...
HPiV-3/1-2233 EV...VLSLKLRLSL...ENNL...LKWILSKKRNNELHH...EIKGERDYGVMR
Rinderpest/1-2183 ER...IKQVMESGIR...TIPGL...VGHILSIKQLNCIQSQAGPAITR...GEINPILRKLIT
CRV/1-2184 EG...IKQVILRVGIR...SPGL...VGHILSSKQTACVQSLHGPPFHA...KSNPHLQGLT
consensus>70

2090 2100 2110 2120 2130 2140 2150
Nipah/1-2244 SDEQV...LLQAG...LKLNGPE...ILKSE...ISYDIGSDINTLR...DT...I...I...I...NEAMNY...FDDNRSPPSHHLEP...Y...PVLERT...RIKTI...I
Hendra/1-2244 CDEKLL...LMQAG...LKMNGPE...ILKNE...VGYDIGSDINTLR...DT...I...I...I...NEAMNY...FDDERSPSHHLEP...F...PVLKTR...RVKTI...I
Sendai/1-2228 PYHQA...LQTF...GFEPNLYK...LSRDF...LSTMNIAIDTHNCMTAFNRVL...K...D...T...FEWARITESDKRLKLTGKYDLY...P...VRDSDG...K...K...I
Measles/1-2183 PIEQV...LISCG...LAINGPK...LCKEL...IHHDVASGDGLL...NS...I...L...Y...RELARF...Y...P...VLVSSG...R...Q...R...E
Mumps/1-2261 ADNNI...ILQAG...GTPSTRK...WLDLP...DYLS...F...N...E...L...Q...SEMARL...I...T...I...H...L...KEVIEILK...G...Q...SSD...H...D...I...L...L...F...T...S...Y...N...V...G...P...L...G...K...I...N...T...I
NDV/1-2204 NIDAA...LEAG...GQPVRPF...CAES...LVST...LIDMTQTTQIASH...I...D...T...V...R...S...V...I...M...E...A...E...G...D...L...A...D...T...V...F...L...F...T...P...Y...N...L...S...T...D...G...K...K...R...T...S
HPiV-5/1-2255 SDNEL...ILKCG...GTPNARN...LIDIE...PVAT...F...F...I...E...F...E...Q...L...I...C...T...M...L...T...T...H...K...E...I...D...I...D...I...T...R...S...G...T...Q...D...Y...E...S...L...L...L...T...P...Y...N...L...G...L...G...K...I...S...T...I
Rabies/1-2127 EMIIIT...L...D...S...D...V...E...S...F...L...V...H...K...M...V...D...D...L...E...Q...R...T...S...K...V...A...I...I...A...I...M...I...V...F...S...N...R...V...F...N...V...S...K...P...L...T...D...P...S...F...Y...P...S...D...P...K...I...L...R...H...F
VSV/1-2109 NIETM...L...Q...I...F...G...V...P...T...G...V...S...H...A...A...L...K...S...D...R...P...A...D...L...T...I...S...L...F...Y...M...A...I...I...S...Y...S...Y...N...I...N...H...I...R...V...G...P...I...P...N...P...P...S...D...G...I...A...Q...N...V
RSV/1-2201 ...E...S...I...D...A...N...I...K...S...L...I...P...L...C...Y...P...I...T...K...K...G...I...N...T...A...L...S...K...L...K...L...S...V...S...G...D...I...L...S...Y...S...I...A...G...R...N...E...V...I
HMPV/1-2005 ...K...S...I...E...A...N...C...K...S...L...S...G...L...R...I...P...I...N...K...K...E...L...N...R...Q...R...L...L...L...T...L...Q...S...N...H...S...V...A...T...V...G...S...K...V...I
Ebola/1-2212 ...S...Y...I...R...L...G...F...P...S...L...E...K...V...L...Y...H...R...Y...N...L...V...D...S...K...R...G...P...L...V...S...I...T...Q...H...L...A...H...L...R...A...E...I...R...E...L...T...N...D...Y...N...Q...R...Q...S...R...T...Q...T...Y...H...F...I...R...T...A...K...G...R...I...T...K...L
Marburg/1-2330 ...F...F...L...T...L...G...F...P...S...L...E...S...F...C...H...R...Y...T...I...P...F...S...E...G...K...A...L...F...H...K...V...Q...S...Y...V...R...Q...G...K...Q...H...L...H...S...L...M...L...D...Y...E...N...N...S...P...L...D...L...R...N...H...F...I...C...S...L...R...G...K...I...T...R...Y
HPiV-3/1-2233 PYHMA...L...Q...I...F...G...F...Q...I...N...L...N...H...L...A...K...E...F...L...S...T...P...D...L...T...N...I...N...N...I...Q...S...F...O...R...T...I...K...D...V...L...F...E...W...I...N...I...T...H...D...R...R...H...K...L...G...G...R...Y...N...I...F...P...L...K...N...K...G...K...L...R...L...L
Rinderpest/1-2183 PIERI...L...I...S...C...G...L...T...I...N...G...T...K...I...C...S...D...V...V...H...D...I...S...S...G...P...D...G...L...L...N...S...S...I...I...L...K...E...L...A...R...F...R...D...N...Q...R...S...Q...Q...G...M...F...H...A...Y...P...V...L...L...S...R...Q...R...E...L
CRV/1-2184 SIEKV...L...I...N...C...G...L...T...I...N...G...L...K...V...C...K...N...L...L...H...D...I...S...S...G...E...G...L...K...G...S...I...T...I...L...Y...R...E...L...A...R...F...K...D...N...H...Q...S...S...H...G...M...F...H...A...Y...P...V...L...I...A...S...Q...E...R...E...L
consensus>70

2160 2170 2180
Nipah/1-2244 MNC...VTKKVIVYS...LIKFKDTKSSELYHI
Hendra/1-2244 MGR...VTRKVTVYS...LIKFKDTKSPELYNI
Sendai/1-2228 SRR...LVLSWSVLSM...STRLVGTSGFPDQKF
Measles/1-2183 VSR...ITRKFVGHIL...LYLGSN...RKLINRF
Mumps/1-2261 LRL...I...V...E...R...I...M...Y...T...V...R...N...W...I...L...P...T...Q...T...R...L...T...L
NDV/1-2204 LKQ...C...T...K...Q...I...E...V...T...I...L...G...L...R...A...K...D...I...N...K...V...G...D...V
HPiV-5/1-2255 VRL...L...T...E...R...I...A...L...N...H...T...I...R...N...W...L...L...P...P...S...L...R...M...V
Rabies/1-2127 NICCST...M...M...Y...L...S...T...A...L...G...D...V...P...S...F...A...R...L...H...D...L...Y...N...R...P...I...T...Y...Y...F...R...K...V...I...R...G...N...V...Y...L...S...W...S...W...S...N...D...T...S...Y...F...K...R...V...A...C...N...S...L...S...L...S...H...W...I...R...L...Y...K...I
VSV/1-2109 GIAITG...S...F...W...L...S...L...M...E...K...D...I...P...L...Y...Q...Q...C...L...A...V...I...Q...S...F...P...I...R...W...E...A...V...S...V...K...G...G...Y...K...Q...K...W...S...T...R...G...D...G...L...P...K...D...T...R...I...S...D...S...L...A...P...I...G...N...W...I...R...S...L...E...V
RSV/1-2201 SNK...L...I...N...H...K...H...M...N...L...K...W...F...N...H...L...N...F...
HMPV/1-2005 ESK...L...W...L...T...N...K...A...N...T...I...D...W...H...E...I...L...N...S
Ebola/1-2212 VND...Y...L...K...F...L...I...V...Q...A...L...K...H...N...G...W...Q...A...E...F...K...K...L
Marburg/1-2330 YND...I...L...K...L...N...L...V...I...K...A...V...E...K...G...N...W...S...Q...A...L...V...E...I...L
HPiV-3/1-2233 SRR...L...V...L...S...W...I...S...L...S...T...R...L...L...T...G...R...F...P...D...E...K...F
Rinderpest/1-2183 ISR...V...A...R...K...F...W...G...Y...I...L...L...Y...S...D...R...L...L...S...R...L
CRV/1-2184 VSI...I...A...K...K...Y...C...G...Y...I...L...L...Y...S...G...D...L...Y...E...I...T...R...I
consensus>70

2190 2200 2210 2220 2230 2240
Nipah/1-2244 KNN...I...R...R...K...V...L...I...D...F...R...S...K...L...M...T...K...T...L...P...K...G...M...Q...E...R...R...E...K...N...G...F...K...E...V...I...W...D...L...S...N...R...E...V...K...I...W...K...I...T...I...G...Y...T...S...I...I...
Hendra/1-2244 KNY...I...R...R...K...V...L...I...D...F...R...S...H...T...M...I...K...L...L...P...K...G...M...K...E...R...R...E...K...S...G...F...K...E...I...W...I...F...D...L...S...N...R...E...V...K...I...W...K...I...T...I...G...Y...L...S...L...V...
Sendai/1-2228 EARL...L...Q...L...G...I...V...S...L...S...R...E...I...R...N...L...R...V...I...T...K...T...I...L...D...R...F...E...N...T...I...H...S...I...T...Y...R...F...L...T...K...E...V...K...I...L...M...K...I...L...G...A...V...K...M...F...G...A...R...Q...N...E...Y...T...T...V...V
Measles/1-2183 IQN...L...K...S...Y...L...V...L...D...L...H...Q...N...I...F...V...K...N...L...S...K...S...E...K...Q...I...I...M...T...G...L...K...R...E...W...F...K...V...T...V...K...E...T...K...E...W...Y...K...L...V...G...S...A...L...I...K...D...
Mumps/1-2261 RQSI...E...L...E...G...F...R...L...R...D...V...I...T...P...M...E...I...L...K...L...S...P...N...R...K...Y...L...K...S...A...L...N...Q...S...T...F...N...H...L...M...G...E...T...S...D...I...L...L...N...R...S...Y...Q...K...R...I...W...K...A...I...G...C...V...I...Y...C...F...L...L...T...P...D...V
NDV/1-2204 ISLV...L...R...G...A...V...S...L...E...D...L...I...P...L...R...T...Y...L...K...R...S...T...C...P...K...Y...L...K...A...L...G...I...T...K...L...K...E...M...F...T...D...T...S...L...L...Y...L...T...R...A...Q...Q...F...Y...M...K...I...T...I...G...N...A...A...K...G...Y...S...N...N...D...S...
HPiV-5/1-2255 KQD...L...E...F...G...I...F...R...I...T...S...I...N...S...D...R...F...L...K...L...S...P...N...R...K...Y...L...I...A...Q...I...T...A...G...Y...R...K...L...I...E...G...D...C...N...I...D...L...T...R...P...I...Q...K...I...W...K...A...L...G...C...V...Y...C...H...D...P...M...D...Q...R...E...
Rabies/1-2127 VKT...I...R...L...V...G...S...I...K...D...L...S...R...E...V...E...R...H...L...H...R...Y...N...R...W...I...T...L...E...D...I...R...S...R...S...L...L...D...Y...S...C...L...
VSV/1-2109 RNQ...V...R...L...N...F...N...F...E...I...L...F...N...Q...L...C...R...T...V...D...N...H...L...K...W...S...N...L...R...R...N...T...G...M...I...E...W...I...N...R...R...I...S...K...E...D...R...S...I...L...M...L...K...S...D...L...H...E...E...N...S...
RSV/1-2201 R...S...T...E...L...N...Y...N...H...L...Y...M...V...E...S...T...Y...P...M...I...S...E...L...L...N...S...L...T...T...N...L...K...K...L...I...K...I...T...G...L...L...Y...N...F...H...N...E...
HMPV/1-2005 P...K...E...L...N...Y...D...F...F...E...A...L...E...N...T...Y...P...N...I...K...I...D...N...L...G...N...A...E...I...K...K...L...I...K...V...T...G...M...L...V...S...K...
Ebola/1-2212 PEL...I...S...V...C...N...R...F...Y...H...I...R...D...C...N...C...E...R...F...L...V...Q...T...L...Y...L...H...R...M...Q...D...S...E...V...K...L...I...R...V...I...G...L...L...S...F...P...D...G...L...Y...R...F...D...
Marburg/1-2330 PNM...H...S...V...C...I...V...H...D...E...C...S...G...C...E...K...R...L...L...K...L...D...F...R...I...N...T...K...I...A...E...Q...K...L...L...R...V...I...G...I...L...F...F...P...G...L...F...K...S...G...S...L...R
HPiV-3/1-2233 EHRA...Q...T...G...Y...V...S...L...A...D...T...L...E...S...L...K...L...L...S...K...N...I...K...N...Y...R...E...C...I...G...S...I...S...Y...W...F...L...I...K...E...V...K...I...L...M...K...I...L...G...A...K...L...L...G...I...P...R...O...Y...K...E...P...
Rinderpest/1-2183 VSN...L...K...S...G...Y...L...F...D...L...H...Q...N...L...F...M...K...N...L...S...K...S...E...K...Q...L...I...R...T...G...L...K...R...E...W...F...K...L...T...T...K...E...I...K...E...W...F...K...L...G...Y...S...A...L...I...R...E...
CRV/1-2184 VRN...L...K...A...N...H...I...F...D...L...H...R...N...L...F...M...D...N...L...S...R...S...D...R...S...L...I...L...T...T...I...P...K...N...W...L...F...Q...L...E...T...K...I...K...E...W...F...K...L...G...Y...S...A...L...I...R...N...H...
consensus>70

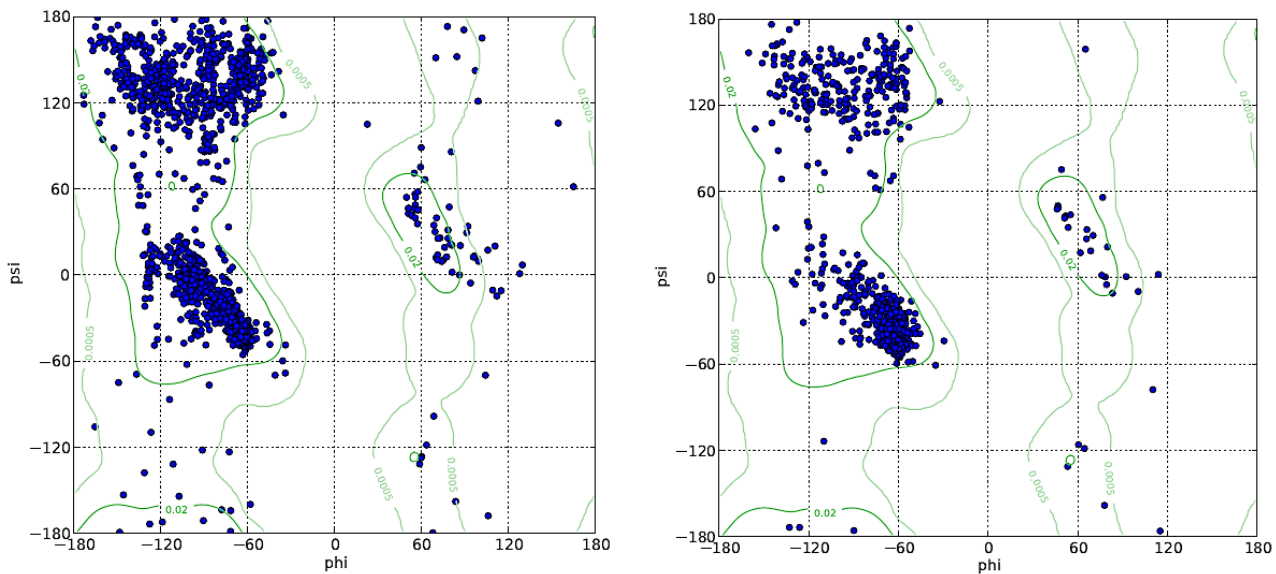


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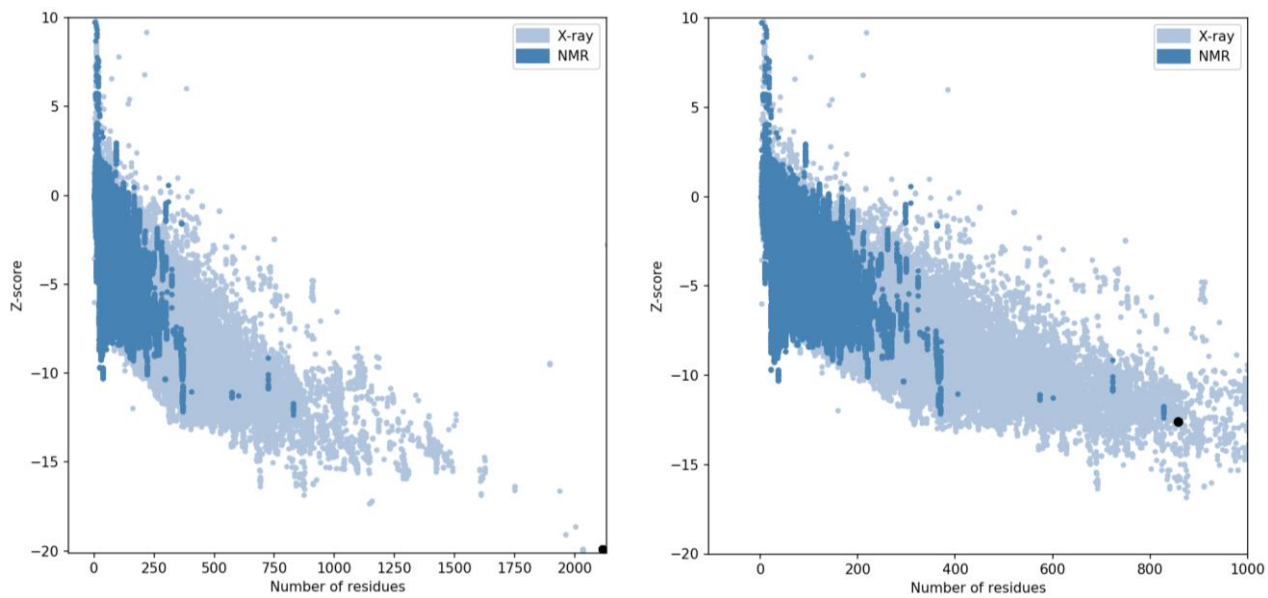
Nipah/1-2244 .....
Hendra/1-2244 .....
Sendai/1-2228 DDGSLDDIEPYDSL.....
Measles/1-2183 .....
Mumps/1-2261 EDSERIDIDN.DIPDYDIHGDI..
NDV/1-2204 .....
HPIV-5/1-2255 S.TEFIDININEEIDRGIDGEEI
Rabies/1-2127 .....
VSV/1-2109 .....WRD.....
RSV/1-2201 .....
HMPV/1-2005 .....
Ebola/1-2212 .....
Marburg/1-2330 A.....
HPIV-3/1-2233 EEQLLENYNQHDEFDID.....
Rinderpest/1-2183 .....
CRV/1-2184 .....
consensus>70 .....

```

**Figure S1. Multiple sequence alignment of L proteins from selected viruses within the class Mononegavirales.** The upper bar represents domains boundaries in NiV. NDV: Newcastle disease virus, HPIV-5: Human Parainfluenza Virus-5, VSV: Vesicular stomatitis virus, RSV: Respiratory Syncytial Virus, HMPV: Human metapneumovirus, HPIV-3: Human Parainfluenza Virus-3, CRV: Canine Distemper Virus aligned and processed by Clustal omega and Esript3 (Robert and Gouet, 2014; Sievers et al., 2011).



**Figure S2.** Ramachandran plots of L protein (upper panel) and the RdRp generated by UCSF chimera (Pettersen et al., 2004).



**Figure S3.** Z-score plots of L protein (upper panel) and the RdRp (Wiederstein and Sippl, 2007).





Figure S4. Secondary structure distribution of the full L protein as predicted by Phyre2 server (Kelley et al., 2015).

Table S1. Nucleoside inhibitors repurposed against NiV RdRp

Compound notation	PubChem CID	Average docking score	In vitro Activity		Max phase <sup>a</sup>
			against	value ( $\mu$ M)	
2'-C-Methylcytidine	15940324	-7.82	HCV	IC <sub>50</sub> =3	-
4'-Azidocytidine	11656590	-7.55	HCV, RSV, DENV	IC <sub>50</sub> =0.02	-
5-Chlorotubercidin	97453	-6.93	Human Cytomegalovirus	EC <sub>50</sub> = 0.007	-
Adafosbuvir	404670268	-7.35	HCV	IC <sub>50</sub> =0.14	1
AT-9010	136141536	-8.20	HCV	IC <sub>50</sub> = 0.009	-
Bemnifosbuvir	122532024	-7.62	HCV, SARS-CoV-2	EC <sub>90</sub> =0.47	3
BMS-986094	49862756	-7.80	HCV	EC <sub>50</sub> = 3	-
Favipiravir	5271809	-7.23	InflnV,	IC <sub>50</sub> = 2.7	3
Galidesivir	10445549	-8.48	Wide-spectrum	IC <sub>50</sub> = 0.3	1
HCV_1	5276734	-7.51	HCV	EC <sub>50</sub> = 65	-
HCV_2	11290467	-6.18	HCV	EC <sub>50</sub> = 200	-
HCV_3	11772329	-7.17	HCV	EC <sub>50</sub> = 30	-
HCV_4	46905540	-7.01	HCV	EC <sub>50</sub> = 35	-
IDX-184	135565589	-7.21	HCV	EC <sub>50</sub> = 0.2	2
INX-189	46700744	-6.95	HCV	EC <sub>50</sub> = 0.01	2
Lumicitabine	89658382	-7.24	RSV, HMPV	EC <sub>50</sub> = 0.26	2
Mericitabine	16122663	-7.79	HCV, SARS-CoV-2	IC <sub>50</sub> = 0.99	2
MK-0608	3011893	-6.35	HCV, WNV, HRV, ZIKV, DENV	IC <sub>50</sub> = 0.07	-
Molnupiravir	145996610	-6.79	InflnV, MERS-CoV, SARS-CoV-2	EC <sub>50</sub> = 0.07	3
NoroV-29	10264872	-8.11	Human norovirus	EC <sub>50</sub> = 0.015	-
NS5B_15	136226315	-7.31	HCV	EC <sub>50</sub> = 3.2	-
PSI-6130	6481236	-6.73	HCV	IC <sub>50</sub> = 0.06	1
PSI-6206	11311503	-6.26	HCV, BVDV	IC <sub>50</sub> = 0.7	1
PSI-7976	45375809	-7.23	HCV	EC <sub>50</sub> = 0.05	-
Remdesivir	56832906	-7.85	HCV, RSV, MERS-CoV, SARS-Cov-2	EC <sub>50</sub> = 0.18	4
Ribavirin	122108	-7.69	PolioV, InflnV, HSV, HCV	IC <sub>50</sub> = 0.002	4
Sofosbuvir	405056582	-7.29	HCV	IC <sub>50</sub> = 0.7	4
T-1106	5271819	-6.90	BVDV, InflnV	EC <sub>50</sub> = 14-19	-
TMC647078	10264257	-6.86	HCV	EC <sub>50</sub> = 7.3	-
Upriofosbuvir	90055716	-7.68	HCV	EC <sub>50</sub> = 0.32	3
Valopicitabine	6918726	-7.29	HCV	EC <sub>50</sub> = 1.5	2
VX-135	123709329	-7.10	HCV	EC <sub>50</sub> = 0.0012 -0.04	2
ZIKA_26	89486782	-6.80	ZIKV	IC <sub>50</sub> = 5.6	-

<sup>a</sup> maximum phase in clinical trials including the currently recruiting studies (retrieved from <https://www.clinicaltrials.gov/ct2/home> and literature). BVDV: bovine viral diarrhea virus. HSV: Herpes simplex virus. HPIV: Human parainfluenza virus. HMPV: Human Metapneumovirus. WNV: West Nile virus. HRV: Human Rhinovirus, ZIKV: Zika Virus.



## References

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