

DOM_HUMAN (H1N1)
DOM_HUMAN (H3N2)
EPI1818121 (H1N1)
EPI1818137 (H3N2)
EPI2026200 (H7N9)
EPI2161544 (H9N2)
EPI1780425 (H1N1)
EPI2149257 (H1N1)

10203040506070

RBD

KKALLVLLLYTFTANADTLCIGYHANNSTDTVDTVLEKNVTVTHSVNLLLEDKHNGLKCLKRGVAPLHLG

KKTIIALSNLILCLVFAQKIPGNDNSTATLCLGHHAVPNGTIIVKTIITNDRIEVTNATELVQNSSIGEICGS

KKAILLVMLLYTFTANADTLCIGYHANNSTDTVDTVLEKNVTVTHSVNLLLEDKHNGLKCLKRGVAPLHLG

KKTIIALSYILCLVFAQKIPGNDNGTATLCLGHHAVPNGTIIVKTIITDDRILEVTNATELVQNSSIGEICDS

MTQILVFAALAIPTNADKICLGHHAVSNGTKVNTLTEREEVVNATETVERTNIPRICSKKRTVDLG

METVSLITILLAAFTVSNADKICIGYQSSNSTSTVDTLTENNVVPVTHAKELHTEHNGMLCATGLGQPLVL

KKAILLVLLYLAFTANADTLCIGYHANNSTDTVDTVLEKNVTVTHSVNLLLEDKHNGLKCLKRGVAPLHLG

KKAILLVLLHTLATANADTLCIGYHANNSTDTVDTVLEKNVTVTHSVNLLLEDKHNGLKCLKRGKSPLYLG

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RBD

KCNLAGWILGNPECESLSTARSWSYIVETSNSDNGTCYPGDFI NYEELREQLSSVSSFERFEIFPKTSSW

PHQILDGGNCTLIDALLGDPQCDGFGNQKEWDLFVERSRANSNCYPYDVPGYASLRSLVASSGTLFEKNES

KCNLAGWILGNPECESLSTARSWSYIVETSNSDNGTCYPGDFI NYEELREQLSSVSSFERFEIFPKTSSW

PQAVLDGGNCTLIDALLGDPQCDGFGNQKWDLFVERSRAYSNCPYDVPDYASLRSLVASSGTLFEKNES

QKGLLGTITGPDQDFLEFSADLIIRREGSDVCYPGKFVNEEARQLRESGGIDKEAMGFTYNGIRT

DTCTIEGLIYGNPSCDLSLEGREWSYIVERPSAVHGLCYPGNVEDLFEELRSLSARSYQRIQIFPDTIW

KCNLAGWILGNPECESLFTASSWSYIVETSNSDNGTCYPGDFI NYEELREQLSSVSSFERFEIFPKASSW

KCNLAGWLLGNPECESILTVSSWSYIVETSNSDNGTCYPGSFTNYEELREQLSSVSSSFEKFEIFPIESSW

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RBD

PHDSDKGVTAAACPHAGAKSFYKNIWLVKKGNSYPKLNQTYNDKKGKEVVLVWGIHHPPTIAAQESLYQ

FNWTGVKQNGTSSACIRGSSSSFFSRLNWLTSLNNIYPAQNVTMPNKEQFDKLYIWGVHHPDPTDKNQISL

PHDSDNGVTAAACPHAGAKSFYKNIWLVKKGNSYPKLNQTYNDKKGKEVVLVWGIHHPPTIAAQESLYQ

FNWTGVTQNGKSSCIRGSSSSFFSRLNWLTXLNTYPALNIMPNKEQFDKLYIWGVHHPGTNDQIFL

NGVYTSACRRSSSFYAEKMWLLSNTDNAEFPQMTKSYKNTKPSAIIWVGIIHSPSTAETKLYGSGNKL

NVSYDGTSTACSSFYKSMRWLTCKNGEYPTQDAQYTNQGNKLI FMWGIHHPSTDQTRGLYTRDNTT

PNYETSRGVTAAACPYAGANSFYRNIWLVKKGNSYPKLSKSYNNKEKEVVLVWGIHHPSTSTDQQSLYQ

PNYKTGETASCFYAGKSSFYRLNLMWLVKKADSYPRLNI SYVNNKGKEVLVWGIHHPPTGNDQGWLYQNA

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RBD

NADAYVFGVTSRYSKKFKPEIATRPKVRRDQEGRMNYYWTLVEPGDKITFEATGNLVVPRYAFTMERDAGS

FAQSSGRITVSTKRSQAAVIPNIGSRPRIRDIRPSRIYWTIVKPGDILLINSTGNLIAPRGVFKIRSGK

NADAYVFGVTSRYSKKFKPEIATRPKVRRDQEGRMNYYWTLVEPGDKITFEATGNLVAPRYAFTMERDAGS

YVRSSGRIIVSTKRSQAAVIPNIGSRPRIRDIRPSRIYWTIVKPGDILLINSTGNLIAPRGVFKIRSGK

VTVGSSNIQQSFVSPGARQPVNGISGRIDFHWLMLNPNDTVTFSENGAFIPDRASFLRGKSGIISGV

SVATEEINRIKFLPIGRPLVNLGMGRINYYQWSVLKPGQTLRKSDGNLIAPWYGHILSGESHGRILKTD

NADAYVFGVTSRYSKKFKPEIATRPKVRRDQEGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMKRGSGS

NASVVFVGTSTYSQKFKEPEIATRPKVRGQAGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMNRGSGSGI

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RBD

GIISDTPVHDCNTTCQTPEGAINTSLPFFQNVHPITIGKCPKYVKSTKLRLATGLRNVPSIQSRGLFGAIG

SSIMRSDAPIGRCKSECITPNGISPNDKPFQNVNRIITYGACPRYVKQSTLKLATGMNRNVPEKQTRGIFGA

GIISDTPVHDCNTTCQTPEGAINTSLPFFQNVHPITIGKCPKYVKSTKLRLATGLRNVPSIQSRGLFGAIG

SSIMRSDAPIGRCKSECITPNGISPNDKPFQNVNRIITYGACPRYIKQSTLKLATGMNRNVPEKQTRGIFGA

QVDANCEGDDGYHSGGTIISNLPFQNIIDSRVAGKCPRYVKQSRLLLATGMKNVPEIKPGRGLFGAIIAGFIE

LKRGNCITVQCQTEKGGGLNTLPLFQNVSKYAFGNCCKSYIGVKSCLKAVGLRNVPSRSSRGLFGAIIAGFIEG

GIISDTSVHDCNTNCQTPKGAINTSLPFFQNIHPVTIGECPKYVKSSTKLRLMATGLRNIPSISQSRGLFGAII

IYSDAPIHDCNTPCQTPKGAINTSLPFFQNVHPVTIGECPKYVKSRRLLKMATGLRNIPSISQSRGLFGAIIAG

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RBD

AGFIEGGWGTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDKITNNKVNSVIEKMNTQFTAVGKEFNHLEKR

IAGFIENGWEGMVDGWYGYFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG

AGFIEGGWGTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDKITNNKVNSVIEKMNTQFTAVGKEFNHLEKR

IAGFIENGWEGMVDGWYGYFRHQNSEGRGQAADLKSTQAAIDQINGKLNRLIGKTNEKFHQIEKEFSEVEG

NWEGELIDGWYGFRRHQAGQEGTAADYKSTQSAIDQITGKLNLIAKTNQOFLIDNEFNVEYKOIGNVI

GWPGLVAGWYGFQHSNDQGVGMAADDRDSTOKAIDKITSKVNNIIVDKMNQYEIIDHEFSEVETRNLNMIN

AGFIEGGWGTGMVDGWYGYHHQNEQGSGYAADRKSTQSAIDGITNNKVNSVIEKMNSQFTAVGKEFNHLEKR

FIEGGWGTGMVDGWYGYHHQDQSGGYAADQKSTQRAIDGITNNKVNSVIEKMNTQFTAVGKEFNHLEKR

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RBD

IELNLKKYVDDGFLDIWNTYNAELVLENERTLDYHDSNVKNLYEKVRNQLKNNAKEIENGCGFEFYHKCDN

RVQDLEKYVEDTKIDLWSYNAEVLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD

IELNLKKYVDDGFLDIWNTYNAELVLENERTLDYHDSNVKNLYEKVRNQLKNNAKEIENGCGFEFYHKCDN

RVQDLEKYVEDTKIDLWSYNAEVLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD

NWTRDSITEVWSYNAEVLVALENQHTIDLTDSEMNKLFEKTKKQLRENAEDMGNGCFKIYHKCD

KIDDDQIDDIWAYNAELLVLENOQTLDEHDANVNNLYKNVKRALGSNAEDGKGFELYHKCDQDCMETI

IELNLKKYVDDGFLDVNTYNAELVLENERTLDYHDSNVKNLYEKVRNQLKNNAKEIENGCGFEFYHKCDN

NLMRKVDDGFLDVNTYNAELLVLENERTLDFHDSNVKNLYEKVRNQLRNNAKEIENGCGFEFYHKCDNTC

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RBD

TCMESVKNGTYDYPKYSEEAELNREKIDGVKLESTRIYQILAIYSTVASSLVVLSLGA I

NACIGSIRNETYDHNVYRDEALNRRFQIKGVELKSGYKDWILWISFAMSCFLLCIALLGF

TCMESVKNGTYDYPKYSEEAELNREKIDGVKLDSTRIYQILAIYSTVASSLVVLSLGA I

NACIGSIRNETYDHNVYRDEALNRRFQIKGVELKSGYKDWILWISFAISCFLLCVALLGF

IRNNTYDHRKYREEAQSRIRIQDVPKLSSGYKDVILWFSFGASCFFILLAVMGLVFCVK

RNGTYNRRKYQEEKLSRRRIEGLVKLESGTYKILTIYSTVASSLVVLSLGA I

TCMESVKNGTYDYPKYSEEAELNREEIDGVKLESTEVYQILAIYSTVASSLVVLSLGA I

MESVKNGTYNLYKYSEESKLNREEIDGVKLDSTRVYQILAIYSTVASSLVVLSLGA I

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X non-conserved
X ≥ 50% conserved
X all match