

SARS-CoV-2 PROTEOME

The proteome of SARS-CoV-2 isolate Wuhan-Hu-1 was downloaded from the NCBI (NCBI Reference Sequence).

NSP 1 (YP_009725297.1)

MESLVPGFNEKTHVQLSLPVQVRDVLVRGFGDSVEEVLSEARQHDKDGTGCLVEVEK
GVLPQLEQPYVFIKRS DARTAPHGHVMVELVAELEGIQYGRSGETLGVLVPHVGEIPV
AYRKVLLRKNNGKAGAGHSYGADLKSFDLGDDELGTDPYEDFQENWNTKHSSGV TRE
LMRELNGG

NSP 2 (YP_009742609.1)

AYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQLDFIDTKRGVYCCREHEHEIA
WYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVPLNSIIKTIQPRVEKKKLDGFMGR
IRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTGDFVKATCEFCGTENLTKEGATT
CGYLPQNAVVKIYCPACHNSEVGPESHSLAEYHNESGLKTILRKGGR TIAFGGCVFSYV
GCHNK CAYWVPRASANIGCNHTGVVGESEGLNDN LLEILQKEKVNINIVGDFKLN EEI
AII LASFSASTSAFVETVKGLDYKAFKQIVESC GNFKVTKGKAKKGAWNIGE QKSILSPL
YAFASEAARVRSIFSRTLETAQNSVRVLQKA AITILDGISQYSLRLIDAMMFTSDLATN
NLVVMAYITGGVVQLTSQWL TNIFGTVYEKLPVLDWLEEKFKEGVEFLRDGWEIVKFI
STCACEIVGGQIVTCAKEIKESVQTFFKLVNKFLALCADSIIIGGAKLKALNLGETFVTHS
KGLYRKCVKSREETGLLMPLKAPKEIIFLEGETLPTEVLTEEVV LKTGDLQPLEQPTSEA
VEAPLVGTPVCINGLM LLEIKDTEKYCALAPNMMVTNNTFTL KGG

NSP 3 (YP_009725299.1)

APTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNEKCSAYTVELGTEVNEFACVVAD
AVIKTLQPVELLTP LGIDLDEWSMATYYLFD ESGEFKLASHMYCSFYPPDEDEEEGD
CEEEEFEPSTQY EYGTEDDYQ GKPLEFGATS AALQPEEEQEEDWLD DDDSQQTVGQQ
DGSEDNQT TTIQTIVEVQPQLEMELTPVVQ TIEVNSFSGYLKLT DNVIKNADIVEEAKK
VKPTVVNAANVYLKHGGGVAGALNKATNNAMQVESDDYIATNGPLKVG GSCVLSGH
NLA KHCLHVVGPNV NKGEDIQLLKSAYENFNQHEVLLAPLLSAGIFGADPIHSLRVCVD
TVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIAEIPKEEVKPFITESKPSVEQRK
QDDK KIKACVEEVTTTLEETKFLTENLLL YIDINGNLHPDSATLVSDIDITFLK KDAPYIVG
DVVQEGVLTAVVIPTKKAGGTTEMLAKALRKVPTDNYITTYPGQGLNGYTVEEAKTVLK
KCKSAFYILPSIISNEKQEILGTVSWNLREMLAHAEETRKLMPVCVETKAIVSTIQRKYK
GIKIQEGVVDYGARFYFYTSKTTVASLINTLNDLNETLVTMPLGYVTHGLNLEEAARYM
RSLKVPATVSVSSPDAVTAYNGYLTSSSKTPEEHFIETISLAGSYKDWSYSGQSTQLGI
EFLKRGDKSVYYTSNPTTFHLDGEVITFDNLK TLLSLREVRTIKVFTTVDNINLHTQVVD
MSMTYGQQFGPTYLDGADVTKIKPHNSHEGKTFYVLPND DTLRVEAFEYHTTDP SFL
GRYMSALNHTKKWKYPQVNGLTSIKWADN NCYLATALLTLQQIELKFNPPALQDAYYR
ARAGEAANFCALILAYCNKTVGELGDVRETMSYLFQHANLDSCKRVLNVVCKTCGQQ
QTTLKGVEAVMYMG TLSYEQFKKGVQIPCTCGKQATKYL VQQESPFVMM SAPPAQYE
LKHGTFTCASEYTGNYQC GHYKHITSKETLYCIDGALLTKSSEYKGPITDV FVKENSYT
TTIKPVTYKLDGVVCTEIDPKLDNYYKKD NSYFTEQPIDLVPNQPYPNASFDNFK FVCD

NIKFADDLNQLTGYKKPASRELKVTFFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVW
HVNNATNKATYKPNTWCIRCLWSTKPVETSNSFDVLKSEDAQGMDNLACEDLKPVSE
EVVENPTIQKDVLECNVKTTEVVGDIIKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKP
NELSRVLGLKTLATHGLAAVNSVPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYM
PYFFTLLLQLCTFTRSTNSRIKASMPPTIAKNTVKSVMGKFCLEASFNYLKSPNFSKLINII
WFLLLSVCLGSLIYSTAALGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSV
CLSGLDSDLTYPSELETIQITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFF
SYFAVHFISNSWLMWLIINLVQMAPISAMVRMYIFFASFYVWKSYPVHVVDGCNSSTC
MMCCKRNRATRVECTTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFIS
DEVARDLSLQFKRPINPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLD
NLRANNTKGSPLINIVFDGKSKCEESSAKSASVYYSQLMCQPILLDDQALVSDVGD
SAEVAVKMFDAYVNTFSSTFNVPMEKLLKTLVATAEAEAKNVSLDNVLSFISAARQGFVD
SDVETKDVVECKLQSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINA
QVAKSHNIALIWNVKDFMSLSEQLRKQIRSAKKNLPPFKLTCATTRQVVNVVTTKIALK
GG

NSP 4 (YP_009725300.1)

KIVNNWLKQLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASDT
CFANKHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFWVPGLPGTILRTTNGDFLHF
LPRVFSAVGNICYTPSKLIEYTDFAVSACVLAEECTIFKDASGKPVYCYDTNVLEGSVA
YESLRPDTRYVLMGSIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSG
RWVNLNDYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAVVTCLAY
YFMRFRRAFGEYSHVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTNDVSF
LAHIQWMMFTPLVPFWITIAIICISTKHFYWFSSNYLKRRVVFNGVSFSTFEEAALCTF
LLNKEMYLKLRSVLLPLTQYNRYLALYNKYKYFSGAMDTSYREAACCHLAKALNDF
SNSGSDVLYQPPQTSITSAVLQ

NSP 5 (YP_009725301.1)

SGFRKMAFSPGKVEGCMVQVTCGTTTTLNLWLDDVVYCPRHVICTSEDMLNPNYEDL
LIRKSNHNFLVQAGNVQLRVIGHSMQNCVLKLVDTANPKTPKYKRVRIQPGQTFVLA
CYNGSPSGVYQCAMRPNFTIKGSFLNGSCGSGVFNIDYDCVSFCYMHHMELPTGVHA
GTDLEGNFYGPFVDRQTAQAAGDTTITVNLVLAWLAAVINGDRWFLNRFTTTLNDFN
LVAMKYNYEPLTQDHVDILGPLSAQTGIAVLDMCASLKELLQNGMNGRTILGSALLEDE
FTPFDVVRQCSCGVTFQ

NSP 6 (YP_009725302.1)

SAVKRTIKGTHHWLLLILTSLLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFV
KHKHAFCLFLLPSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLSGFKLKDCVMYA
SAVLLILMTARTVYDDGARRVWTLMNVLTLVYKVVYGNALDQAISMWALISVTSNYS
GVVTTVMFLARGIVFMCVEYCFIFITGNTLQCIMLVYCFGLGYFCTCYFGLFCLLNRYFR
LTLGVYDYLVSTQEFRYMNSQGLLPPKNSIDAFKLNKLLGVGGKPCIKVATVQ

NSP 7 (YP_009725303.1)

SKMSDVKCTSVLLSVLQQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMSVLLSV
LLSMQGAVDINKLCEEMLDNRATLQ

NSP 8 (YP_009725304.1)

AIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKCLKKSLNVAKSEFDRDAAMQRK
LEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIINNARDGCV
PLNIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQVVDADSKIVQLSEISMDN
SPNLAWPLIVTALRANSVAVKLQ

NSP 9 (YP_009725305.1):

NNELSPVALRQMSCAAGTTQACTDDNALAYYNTTKGGRFVLALLSDLQDLKWARFP
KSDGTGTIYTELEPPCRFVTDTPKGPVKYLYFIKGLNNLNRMVGLSLAATVRLQ

NSP 10 (YP_009725306.1)

AGNATEVPANSTVLSFCFAVDAKAYKDYLASGGQPITNCVKMLCTHTGTGQAITVT
PEANMDQESFGGASCCLYCRCHIDHPNPKGFCDLKGKYVQIPTTCANDPVGFTLKNT
VCTVCGMWKGYGCSCDQLREPMLQ

NSP 11 (YP_009725312.1)

SADAQSFLNGFAV

NSP 12 (YP_009725307.1)

SADAQSFLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQE
KDEDDNLIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFKFRIDGDMVPHISRQ
RLTKYTMADLVYALRHFDEGNCDTLKEILVTYNCCDDDFNKKDWYDFVENPDILRVY
ANLGERVRQALLKTVQFCDAMRNAGIVGLTLDNQLNGNWDYDFGDFIQTTPGSGVP
VVDSYYSLLMPILTLTRALTAESHVDTDLTKPYIKWDLKDYDFTEERLKLFDYFYKYWD
QTYHPNCVNCLDDRCILHCANFNVLVSTVFPPTSFGPLVRKIFVDGVPFVSTGYHFRE
LGVVHNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQ
TVKPGNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYRYNLPTMCDI
RQLLFVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWKARLYYDSMSYED
QDALFAYTKRNVIPITITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIATR
GATVVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLA
RKHTTCCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNI
CQAVTANVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVTDFVNEFYAYLRKHFS
MMILSDDAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEF
CSQHTMLVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTK
HPNQEYADVHLYLQYIRKLHDELTDGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPH
TVLQ

NSP 13 (YP_009725308.1)

AVGACVLCNSQTSRLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVT
DVTQLYLGGMSSYYCKSHKPPISFPLCANGQVFLYKNTCVGSDNVTDFNAIATCDWT
NAGDYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRP
PLNRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDVYRGTTTYKLVNVDYFVLTSHTV
MPLSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSH
FAIGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNS
TLEQYVFCVTNALPETTADIVVFDEISMATNYDLSVVNARLRAKHVYVYIGDPAQLPAPR
TLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSAVYDNKCLKAHKDKS
AQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASKILG
LPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLYDKLQ
FTSLEIPRRNVATLQ

NSP 14 (YP_009725309.1)

AENVTLGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLCVDIPGIPKDMTYRRLISMMG
FKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHATREAVGTNLPLQLGFSTGVNL
VAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMYKGLPWNVVRIVQMLSDTLK
NLSDRVVFLWAHGFELTSMKYFVKIGPERTCCLCDRRATCFSTASDTYACWHHSIGF
DYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVASCDAIMTRCLAVHECFVKR
VDWTIEYPIIGDELKINAACRQVHMVKAALLADKFPVLHDIGNPKAICVPPQADVEWK
FYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWNCNVDRIYDRIYDRIYDRIYDRIY
NLNLPDGDGGSLYVNKHAFTPAFDKSAFVNLKQLPFFYSDSPCESHGKQVSDIDY
VPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMISAGFSLWVYKQFDTYNLWNT
FTRLQ

NSP 15 (YP_009725310.1)

SLENVAFNVVNKGHFDGQQGQGEVPVSIINNTVYTKVDGVDVELFENKTTLPVNVAFELW
AKRNIKPVPEVKILNNGVDIAANTVIWDYKRDAPAHISTIGVCSMTDIAKKPTETICAPLT
VFFDGRVDGQVDLFRNARNGVLITEGSVKGLQPSVGPQASLNGVTLIGEAVKTQFN
YKKVDGVVQQLPETYFTQSRNLQEFKPRSQMEIDFLELAMDEFIERYKLEGYAFEHIVY
GDFSHSQLGGLHLLIGLAKRFKESPFELEDFIPMDSTVKNYFITDAQTGSSKCVCSVIDL
LLDDFVEIISQDLSVSVKVKVTIDYTEISFMLWCKDGHVETFYPKLQ

NSP 16 (YP_009725311.1)

SSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATLPKGIMMNVAKYTQLCQYLNT
LTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTLLVDSDLNDFVSDADSTLIGD
CATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTYICGFIQKALGGSVAIKITEH
SWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCNYLGPREQIDGYVMHANYIFW
RNTNPIQLSSYSFLDMSKFPLKLRGTAVMSLKEGQINDMILSLLSKGRLLIIRENNRVV
DVLVNN

SPIKE PROTEIN (QHR63290.2)

MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDLFLPFF
SNVTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTSEKSNIIRGWIFGTTLDSTQSLLI
VNNATNVVIKVCEFQFCNDPFLGVYYHKNNKSWMESEFRVYSSANNCTFEYVSQPFL
MDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLVRDLPQGFSALEPLVDLPIGINITR
FQTLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYNENGTITDAVDCALDP
LSEKCTKLSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWN
RKRIKNCVADYSVLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVQRQIAPG
QTGKIADYNYKLPDDFTGCVIAWNSNNLDSKVGGNYNYLYRLFRKSNLKPFRDISTEI
YQAGSTPCNGVEGFNCYFPLQSYGFQPTNGVGYQPYRVVLSFELLHAPATVCGPKK
STNLVKNKCVNFNENGLTGTGVLTESNKKFLPFQFGRDIADTTDAVRDPQTLEILDIT
PCSFGGVSVITPGTNTSNQVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTR
AGCLIGAHEVNNSECDIPIGAGICASYQTQTNSPRRARSVASQSIIAYTMSLGAENSV
AYSNNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYICGDSTECNLLLQYGSFCTQLNR
ALTGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPDPSKPSKRSFIEDLLFNK
VTLADAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPLTDEMIAQYTSALLAGTITSG
WTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNNSAIGKIQDLSSTASA
LGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLNDILSRDKVEAEVQIDRLITGRLQSL
QTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQSAPHGVVF
LHVTVVPAQEKNTTAPAICHGKAHFPREGVVFVSNNGTHWFVTQRNFYEPQIITTDNTF
VSGNCDVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVLGDISGINASVNIQK
EIDRLNEVAKNLNESLIDLQELGKYEQYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCS
CLKGCCSCGSCCKFDEDDSEPVKGVKLHYT

ORF3A PROTEIN (QNH88661.1)

MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFGWLIVGVALLAVFQSASK
IITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLEAPFLYLYALVYFLQSINFVRI
IMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPYNSVTSSIVITSGDGTTSPISEH
DYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQLSTDTGVEHVTTFFIYNKIVDEPE
EHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL

ENVELOPE PROTEIN (QJA17754.1)

MYSFVSEETGLIVNSVLLFLAFVFLVTLAILTALRLCAYCCNIVNVSLVKPSFYVYSR
VKNLNSSRVPDLLV

MEMBRANE PROTEIN (QJA17755.1)

MADSNGTITVEELKKLLEQWNLVIGFLFTWICLLQFAYANRNRFLYIIKLIFLWLLWPVT
LACFVLAAVYRINWITGGIAIAMAACLVGLMWLSYFIASFRLFARTRSMWSFNPETNILLN
VPLHGTILTRPILLESELVIGAVILRGHLRIAGHHLGRCDIKDLPKEITVATSRTLSYYKLG
A
SQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIALLVQ

ORF6 PROTEIN (QNH88664.1)

MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIKNLSKSLTENKYSQLDEEQPMEID

ORF7a PROTEIN (QWW27599.1)

MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNSPFHPLADNKFALTCFS
TQFAFACPDGVKHVYQLRARSASPFLIRQEEVQELYSPIFLIVAAIVFITLCFTLKRKIE

ORF7b PROTEIN (BDB04007.1)

MIELSLIDFYLCFLAFLFLVLIMLIIFWFSLELQDHNETCHA

ORF8 PROTEIN (QNH88667.1)

MKFLVFLGIITVAAFHQECSLQSQCTQHQPYYVDDPCPIHFYSKWYIRVGARKSAPLIEL
CVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRCSFYEDFLEYHDVRVVL
DFI

NUCLEOCAPSID PROTEIN (QJC20758.1)

MSDNGPQNQRNAPRITFGGSPDSTGSNQNGERSGARSKQRRPQGLPNNTASWFTA
LTQHGKEDLKFPRGQGVPIINTNSSPDDQIGYYRRATRRIRGGDGKMKDLSPRWYFYY
LGTGPEAGLPYGANKDGIWVATEGALNTPKDHIGTRNPANNAIVLQLPQGTTLPKGF
YAEGSRGGSQASSRSSSRNSSRNSTPGSSRGTSPARMAGNGGDAALALLLLDRL
NQLESKMSGKGGQQGQQTVTKKSAEASKKPRQKRTATKAYNVTQAFGRRGPEQT
QGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAIKLD
DKDPNFKDQVILLNKHIDAYKTFPPTPEPKKDKKKKADETQALPQRQKKQQTVTLLPAAD
LDDFSKQLQQSMSSADSTQA

ORF10 PROTEIN (QNH88669.1)

MGYINFFAFPFTIYSLLLCRMNSRNYIAQVDVVFNLTL