

Table S1: Representative members in the *Parvovirinae* subfamily for the phylogenetic trees in Figure 1 and their GenBank numbers.

Bocavirus	Human (HM132056)	Porcine (JN831651)	Canine (NC_004442)	Sea Lion (JN420365)	Gorilla (HM145750)	Bovine (DQ335247)
Partetravirus	Human (AY622943)	Porcine (EU200677)	Bovine (EU200669)	Swine (AB076669)		
Parvovirus	Rat (AF321230)	Porcine (FJ822038)	Canine (EF011664)	Mouse (NC_011618)		
Dependovirus	Human (NC_001401)	Duck (NC_006147)	Goose (JF333590)			
Erythrovirus	Human (AB550331)	Simian (U26342)				
Amdovirus	Mink (JN040434)	Fox (JN202450)				
Unclassified	Bovine (JF504697)	Bovine (AF406967)	Turkey (GU214706)			

NS1

10 20 30 40 50 60 70 80 90
Bufoavirus-1-96 ---MALSKDVMGDIDWIKRKRDKQCLSEVFKVNDLHFKXKTKDGGVNIATKDYRKNRPERNEIKQVIEIDQQTIVSNRDGDESKKISIMNP
Bufoavirus-2-39 ---MALSKDVMGDIDWIKRKRDKQCLSEVFKVNDLHFKXKTKDGGVNIATKDYRKNRPERNEIKQVIEIDQQTIVSNRDGDESKKISIMNP
Mouse Parvovirus -MAGNAYSDEVLTGKTNLWLEKSNQEVFSEVFKTQDVLN-----GKDIGNNYRKELEQDEELKS-LRQGAETWQSDMEWESTVDEL
Porcine Parvovirus MAAGNTYSDEVLTGKTNLWLDNAQKEAFSEVFKTKQVNLN-----GKETAANNYRKELEQDEELKS-LRQGAETWQSDMEWESTVDEL
Mink Amdovirus MAQAQIDQRRRQDLYVQLKKEINDGEGVAVLWFOQKTYT-----DKDKRPTKATPPLRTTSSDRLRFAFDSIEENLTASNEHLTNNIEI
Fox Amdovirus MAQAQIAEQKILQALFEQLKKEIADGEGVAVLWFOQKAYT-----DGDNRPTKATPPLRTTSSDRLRFAFDSIEENIKSNTDCLSNNEI

100 110 120 130 140 150 160 170 180
Bufoavirus-1-96 PHRNAIILTLGLVKKKLFDFYFKVKNLEPNEVDWFOSEELGKDTGDIHIVLVC-----SEKINNHSGKWMQKVFYAEKGLVLTTLVLAMDS
Bufoavirus-2-39 PHRNAIILTLGLVKKKLFDFYFKVKNLEPNEVDWFOSEELGKDTGDIHIVLVC-----SEKINNHSGKWMQKVFYAEKGLVLTTLVLAMDS
Mouse Parvovirus TKKQVEIYDSLVKKCLFEVLSTKNLAPSDHNVQVQHWGRDQGWCHCVLIG-----GDFDFAQCKWRRQLSVYSRWVTAACNVQ-
Porcine Parvovirus TKRQVLIYDFSLVKKCLFEGLTKNLSESDCYWFFQVQHWGRDQGWCHCVLIG-----GKGLQAMGKVFRRKGLNNLWVSRWVIMQCKVP-
Mink Amdovirus NFKCKLTGLKTLLEL--IDKHVKSHRWSDSNKVNLIWQLEKGTQOQPHIECCMGYFDKNEPDKOVQKSLGWFMKRLNKDLAVIYSNHHCDIQD
Fox Amdovirus NFKCKLTGLKTLVLS--LDKHVKSHRWANNLQFIWQVLEKGTQKHLHIECLVGYSDSTADKIDISKLSWFIKIKNKELATIWSNHHCDIQLD

190 200 210 220 230 240 250 260 270
Bufoavirus-1-96 EHLQALLQQTQKPKQVENDWVDLVKYTHPQTKKQYCKNINFGEMIANFYFLIKKPVITN--DDKGYIYVDSGFKLNNSFNDRYLVARH
Bufoavirus-2-39 EHLQALLQQTQKPKQVENDWVDLVKYTHPQTKKQYCKNINFGEMIANFYFLIKKPVITN--DDKGYIYVDSGFKLNNSFNDRYLVAKH
Mouse Parvovirus ---LTPERIKRRELAEDSEWVTLTYKHQTKKDYKCVLFGNIIAYFYFLIKKISTSPPRDGGYFLSSDSGKWTNFKEGEERLVSKL
Porcine Parvovirus ---LTPERIKRRELAEDSEWVTLTYKHQTKKDYKCVLFGNIIAYFYFLIKKISTSPPRDGGYFLSSDSGKWTNFKEGEERLVSKL
Mink Amdovirus --IKDPEBRANKLKVWIEDGPTKPKYFNKQTKQDYNNPVLRLDYTFIYLFNKDKIND--SMDGYFAAGNGGIVDNLNKKERKTRKMY
Fox Amdovirus --IKRPEBRANLNVLQDGIKPKYFNKQTKQDYNNPVLRLDYTFIYLFNKDKIND--SMDGYFAAGNGGIVDNLNKKERKTRKMY

280 290 300 310 320 330 340 350 360
Bufoavirus-1-96 CQNLFRQDSDSLTTIQPQQ-----KKIKRMVSAKESIKETVLDLTDK
Bufoavirus-2-39 CQNLFRQDSDSLTTIQPQQ-----KKIKRMVSAKESIKETVLDLTDK
Mouse Parvovirus YTDMMR-PETVETTTTAAQE-----TKRGRIQTKKEVSIKTLTKELVHK
Porcine Parvovirus FTEANK-PETVETTTTAAQE-----AKRGRIQTKKEVSIKTLTKELVHK
Mink Amdovirus LDEQSSDIMDANIDWEDGQD-----APKVTDQT-----DSATTKGTSLIWKSCATKVTSKKEVANPVQPSKKRLYSQSFLDALFNV
Fox Amdovirus LDEQSSDIMDANIDWEDGQD-----APKVTDQT-----DSATTKGTSLIWKSCATKVTSKKEVANPVQPSKKRLYSQSFLDALFNV

370 380 390 400 410 420 430 440 450
Bufoavirus-1-96 RIITREKWMLODPSYIQFIAQPGDEQTCSAVLDAHAFRIATERSAMDLEKHPG--KLR--HIKTKAKWLIKNNMNPQKQVYHAIMCC
Bufoavirus-2-39 RIITREKWMLODPSYIQFIAQPGDEQTCSAVLDAHAFRIATERSAMDLEKHPG--KLR--HVKTKAKWLIKNNMNPQKQVYHAIMCC
Mouse Parvovirus RYTSBEDWMMQDPSYIEMMAQGGENLKNLTLHCITLTLARTATADLLEKAETSKEITNFSLPDRTRCKIFAFHGNWYKVCCHAIQCV
Porcine Parvovirus RYTSBEDWMMQDPSYIEMMAQGGENLKNLTLHCITLTLARTATADLLEKAETSKEITNFSLPDRTRCKIFAFHGNWYKVCCHAIQCV
Mink Amdovirus GCFTPEDMIKQSDRYLELSLEPNQFKINILLHMNVQKVTMTITAFDCLIKFNE-----EEDDKPLLATIKDMGLNEQYLVKVLCTI
Fox Amdovirus GCFTPEDMIKQSDRYLELSLEPNQFKINILLHMNVQKVTMTITAFDCLIKFNE-----EEDDKPLLATIKDMGLNEQYLVKVLCTI

460 470 480 490 500 510 520 530 540
Bufoavirus-1-96 LNKQMGKRNITILCGPASTGKSLLAQKIAKLVGNITGCYNPSNANFPFNDQCNKNLIWVEEAGNLGQOVNSFKALMSGQAIRDDQKGGKSK
Bufoavirus-2-39 LNKQMGKRNITILCGPASTGKSLLAQKIAKLVGNITGCYNPSNANFPFNDQCNKNLIWVEEAGNLGQOVNSFKALMSGQAIRDDQKGGKSK
Mouse Parvovirus LNRQGGKRNITILFHGPASTGKSIITAOAIAQAVGNVGCYNAANVFPFNDQCNKNLIWVEEAGNFGQOVNOFKAIQSGQAIRDDQKGGKSK
Porcine Parvovirus LNRQGGKRNITILFHGPASTGKSIITAOAIAQAVGNVGCYNAANVFPFNDQCNKNLIWVEEAGNFSNOVNOFKAIQSGQAIRDDQKGGKSK
Mink Amdovirus LFKQGGKRCILWFYGPGGTGLTLLASLICKATVNYGMVTTSNPNFPFNDQCNKNLIWVEEAGNFGQOVNDFKAITGGGDKVVDTKNKQPO
Fox Amdovirus LFKQGGKRCILWFYGPGGTGLTLLANLICTAVKNFQGMVTTSNPNFPFNDQCNKNLIWVEEAGNFGQOVNDFKAITGGGDKVVDTKNKQPO

550 560 570 580 590 600 610 620 630
Bufoavirus-1-96 SLEPTPVVMTTNEIDITRVHIGDELKVEHRQPIMDRCLRFELKKNKLSGDHGLEDSPELPAHFKYLEGHGFYPTMWSYIDRWGTPPWGGEW
Bufoavirus-2-39 SLEPTPVVMTTNEIDITRVHIGDELKVEHRQPIMDRCLRFELKKNKLSGDHGLEDSPELPAHFKYLEGHGFYPTMWSYIDRWGTPPWGGEW
Mouse Parvovirus QLEPTPVVMTTNEIDITRVHIGDEEERPEHTQPIRDRMLNINLHHTLTPGDFGLVDKNWVPMICAWLVKNGYQSTMASYCARWGWKVPDQTEW
Porcine Parvovirus QLEPTPVVMTTNEIDITRVHIGDEEERPEHTQPIRDRMLNINLHHTLTPGDFGLLOETEWEPLICAWLVKNGYQSTMASYMHHRWGNVPDQSEKW
Mink Amdovirus SIKRG-CVIVTSTNITKVIYGCVEFNAAHAEPLKQRMKIRCMKTIINPKTKITP-----GMLKRWLNTW
Fox Amdovirus AIKRG-VTVITSNKDKITKVIYCAVEFNVAEPLKQRMKIRCMKTIINPKTKITP-----GMLKRWLNR

640 650 660 670 680 690 700 710 720
Bufoavirus-1-96 NTKKPEASSSHLEQTEEBE-PSAIPNPPTPEWNN-GVQVSTSKSTKPTLAESLDPEDEKFAALLKDIETERALATIP----EEENIEE
Bufoavirus-2-39 NTKKPEASSSHLEQTEEBE-PSAIPNPPTPEWNTATGSAHSAGKSTKPTLAESLDPEDEKFAALLKDIETERALATIP----EEENIEE
Mouse Parvovirus AE-PKVPTP--INSLGSARSPTTEKSTPPLSQNYALTPPLASDLED-LALEPWPSTNPPTVAGTAETQNTGEGASKACQDGLSPTWSEIEE
Porcine Parvovirus EE-PKIQTP--INAP-TDSKISTSVKTSADNNYAATPIQEDLDLALALEPWPSEPTPTTNLHLTPPPDSAIRP-----SPTWSEIET
Mink Amdovirus DRQPIQLSHE-MPELYLETTFGNSSATATKNTGNSQETAKSAESVNTENCDEPKRSASSVPAKQHKRPRHE-----
Fox Amdovirus -----BTGTGANVETSAEKNTGFLOESTAESAGGANTTKSDTQRKVVD SAPLKAARPRHE-----

730 740
Bufoavirus-1-96 LAATGYCQPLFSGPDVNASN--
Bufoavirus-2-39 LAATGYCQPLFSGPDVNASN--
Mouse Parvovirus DIRACFGAEPLKDDFSEPLNLD
Porcine Parvovirus DIRACFGEN-----CAPTTNLE
Mink Amdovirus -----
Fox Amdovirus -----

VP1

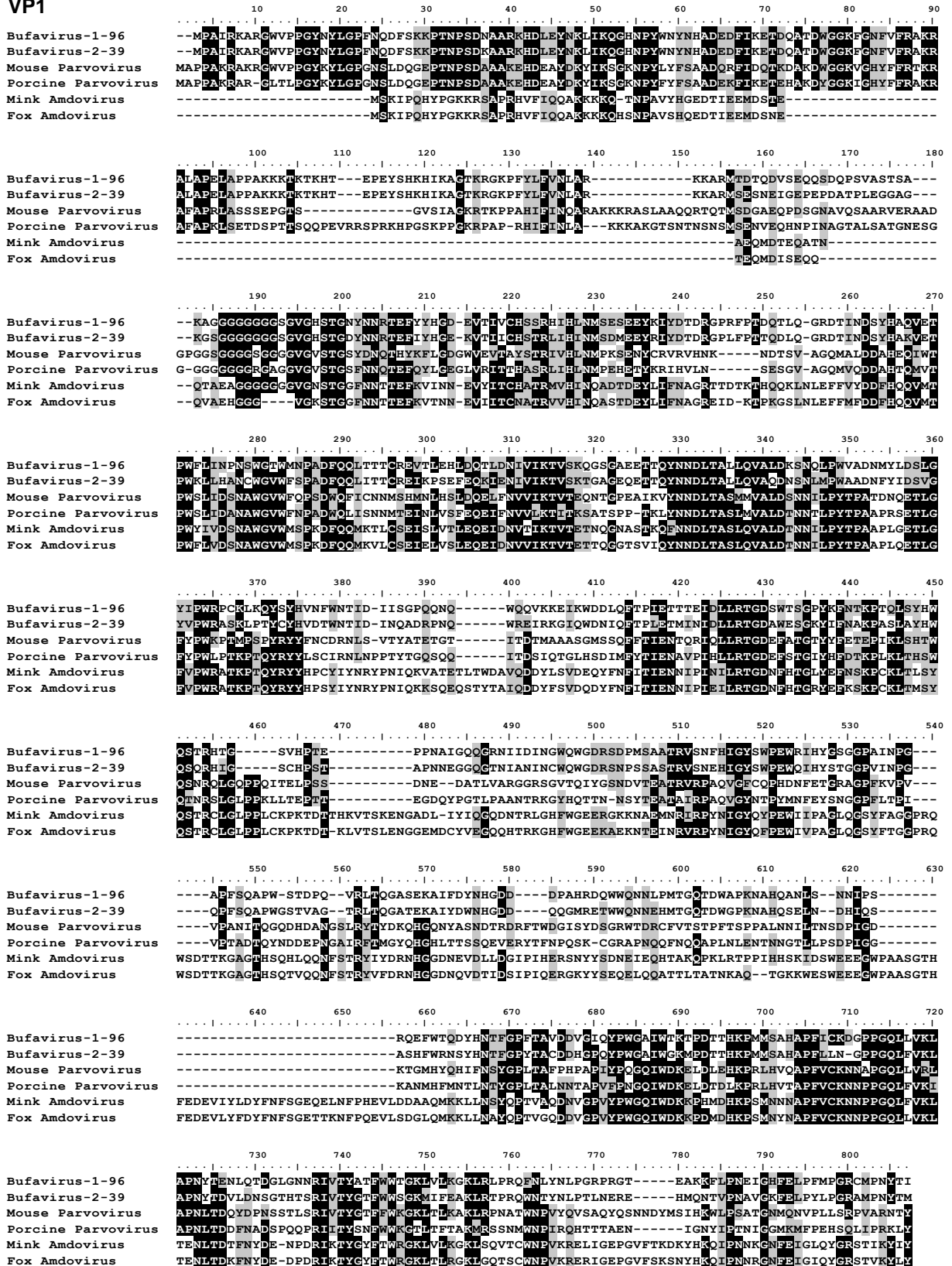


Figure S1. Alignment of NS1 and VP1 of Bufoviridae and two closely-related Parvoviridae genera. Shading highlighted 60%-100% similarity.