This form should be used for all taxonomic proposals. Please complete all those modules that are applicable (and then delete the unwanted sections). For guidance, see the notes written in blue and the separate document "Help with completing a taxonomic proposal"

Please try to keep related proposals within a single document; you can copy the modules to create more than one genus within a new family, for example.

MODULE 1: **TITLE, AUTHORS, etc**

Code assigned:	***2016.007a-dS***	(to be completed by ICTV officers)

Short title: Create 1 new species (*Ampivirus A*) in a new genus (*Ampivirus*)
(e.g. 6 new species in the genus *Zetavirus*)

Modules attached (modules 1 and 11 are required)	**2** ☒ **3** ☒ **4** ☐ **5** ☐ **6** ☐ **7** ☐ **8** ☐ **9** ☐ **10** ☐ **11** ☒

Author(s):

Roland Zell, Eric Delwart, Alexander E. Gorbalenya, Tapani Hovi, Andrew M.Q. King, Nick J. Knowles, A. Michael Lindberg, Mark A. Pallansch, Ann C. Palmenberg, Gabor Reuter, Peter Simmonds, Tim Skern, Glyn Stanway and Teruo Yamashita

Corresponding author with e-mail address:

Roland Zell (roland.zell@med.uni-jena.de)

List the ICTV study group(s) that have seen this proposal:

A list of study groups and contacts is provided at http://www.ictvonline.org/subcommittees.asp . If in doubt, contact the appropriate subcommittee chair (fungal, invertebrate, plant, prokaryote or vertebrate viruses)	*Picornaviridae* Study Group

ICTV Study Group comments (if any) and response of the proposer:

Date first submitted to ICTV: 15/06/2016
Date of this revision (if different to above):

ICTV-EC comments and response of the proposer:

MODULE 2: **NEW SPECIES**

creating and naming one or more new species.

If more than one, they should be a group of related species belonging to the same genus. All new species must be placed in a higher taxon. This is usually a genus although it is also permissible for species to be "unassigned" within a subfamily or family. Wherever possible, provide sequence accession number(s) for **one** isolate of each new species proposed.

Code	***2016.007aS***	(assigned by ICTV officers)

To create 1 new species within:

Genus:	***Ampivirus*** (new)
Subfamily:	
Family:	***Picornaviridae***
Order:	***Picornavirales***

Fill in all that apply.

- If the higher taxon has yet to be created (in a later module, below) write "**(new)**" after its proposed name.
- If no genus is specified, enter "**unassigned**" in the genus box.

Name of new species:	**Representative isolate: (only 1 per species please)**	**GenBank sequence accession number(s)**
Ampivirus A	newt picornavirus [newt/2013/HUN]	KP770140

Reasons to justify the creation and assignment of the new species:

- Explain how the proposed species differ(s) from all existing species.
  - If species demarcation criteria (see module 3) have previously been defined for the genus, **explain how the new species meet these criteria**.
  - If criteria for demarcating species need to be defined (because there will now be more than one species in the genus), please state the proposed criteria.
- Further material in support of this proposal may be presented in the Appendix, Module 11

A novel picornavirus was detected in faecal samples of the smooth newt (*Lissotriton vulgaris*) in Hungary. Virus isolates are not available. The sequence exhibits significant similarity to picornaviruses and a 3-3-4 picornavirus genome layout (compare Figure 1):

VPg+5'UTR[1AB-1C-1D/2A-2B-2C^{Hel}/3A-3B^{VPg}-3C^{Prot}-3D^{Pol}]3'UTR-poly(A)

Ampivirus proteins P1, 2C and 3CD show only very low amino acid similarities with the orthologous proteins of other picornaviruses.
Alignments reveal amino acid identities ranging from:
P1: 11.1-16.0%,
2C^{Hel}: 15.2-22.0%,
3D^{Pol}: 17.0-24.4%.
Further typical picornavirus features of the ampivirus polyprotein sequence are:
(i) two rhv-like domains (Pfam database) corresponding to VP0, VP3
(ii) NTP-binding motif of 2C^{Hel} (**G**$_{1447}$DSQC**GKT**, Walker A motif, and a D$_{1499}$DLLQ motif)
(iii) putative 3C proteinase catalytic triad (H$_{1961}$, D$_{2025}$, D$_{2089}$ICG)
(iv) RNA-dependent RNA polymerase motifs (K$_{2351}$DELR, G$_{2494}$LPSG, L$_{2539}$GDD, F$_{2598}$LKS)

Phylogenetic trees comprising reference sequences of the order *Picornavirales* indicate that ampivirus clusters at the root of the picornavirus branch (compare Figure 2; Appendix). Figures 3, 4 (Appendix) show phylogenetic trees of the picornavirus P1 and 3CD proteins.

MODULE 3: **NEW GENUS**

creating a new genus

Ideally, a genus should be placed within a higher taxon.

Code	***2016.007bS***	(assigned by ICTV officers)

To create a new genus within:

Subfamily:	
Family:	***Picornaviridae***
Order:	***Picornavirales***

Fill in all that apply.

- If the higher taxon has yet to be created (in a later module, below) write "**(new)**" after its proposed name.
- If no family is specified, enter "**unassigned**" in the family box

naming a new genus

Code	***2016.007cS***	(assigned by ICTV officers)

To name the new genus: *Ampivirus*

Assigning the type species and other species to a new genus

Code	***2016.007dS***	(assigned by ICTV officers)

To designate the following as the type species of the new genus

Ampivirus A	Every genus must have a type species. This should be a well characterized species although not necessarily the first to be discovered

The new genus will also contain any other new species created and assigned to it (Module 2) and any that are being moved from elsewhere (Module 7b). **Please enter here the TOTAL number of species (including the type species) that the genus will contain:**

1

Reasons to justify the creation of a new genus:

Additional material in support of this proposal may be presented in the Appendix, Module 11

Ampivirus is the most divergent picornavirus presently known (Figures 2, 4; Appendix). It has only little sequence similarity to the other picornaviruses. It is the first picornavirus with a capsid protein (VP1) that has similarity to the CRPV capsid superfamily (Pfam database) of the dicistroviruses, iflaviruses, marnaviruses and some diatom viruses (labyrnavirus, bacillarnavirus) (Figure 1; Appendix). Other unique features of *Ampivirus* are rather large $3C^{Pro}$ and $3D^{Pol}$ proteins.

Origin of the new genus name:

Ampivirus: from **am**phibian **pi**corna**virus**

Reasons to justify the choice of type species:

only a single species

Species demarcation criteria in the new genus:

If there will be more than one species in the new genus, list the criteria being used for species demarcation and explain how the proposed members meet these criteria.

only a single species

MODULE 11: **APPENDIX**: supporting material

additional material in support of this proposal

References:

Reuter G, Boros A, Toth Z, Phan TG, Delwart E, Pankovics P. 2015. A highly divergent picornavirus in an amphibian, the smooth newt (*Lissotriton vulgaris*). J Gen Virol 96:2607-2613.

Annex:

Include as much information as necessary to support the proposal, including diagrams comparing the old and new taxonomic orders. The use of Figures and Tables is strongly recommended but direct pasting of content from publications will require permission from the copyright holder together with appropriate acknowledgement as this proposal will be placed on a public web site. For phylogenetic analysis, try to provide a tree where branch length is related to genetic distance.

Genome organization:

Fig. 1 *Ampivirus A1* (KP770140)

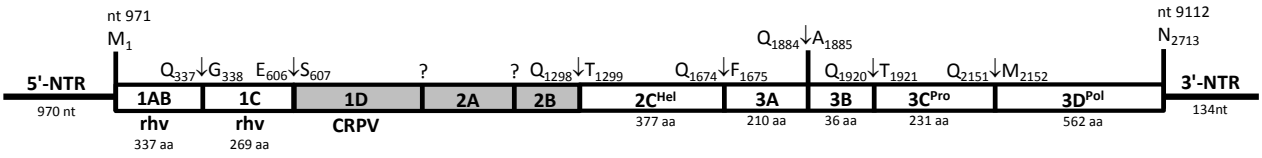


Figure 1: Schematic depiction of the *Ampivirus* genome organization. The open reading frames are indicated by boxes. Positions of putative aa cleavage sites and the lengths of the deduced proteins are shown as proposed by Reuter et al. (2015). Arrows (↓) indicate the putative $3C^{pro}$ processing sites, whereas question marks (?) hint at two unknown cleavage sites. The sizes of the respective proteins (shaded gray) is unclear. Rhv and CRPV domains proposed by the Pfam database are also indicated

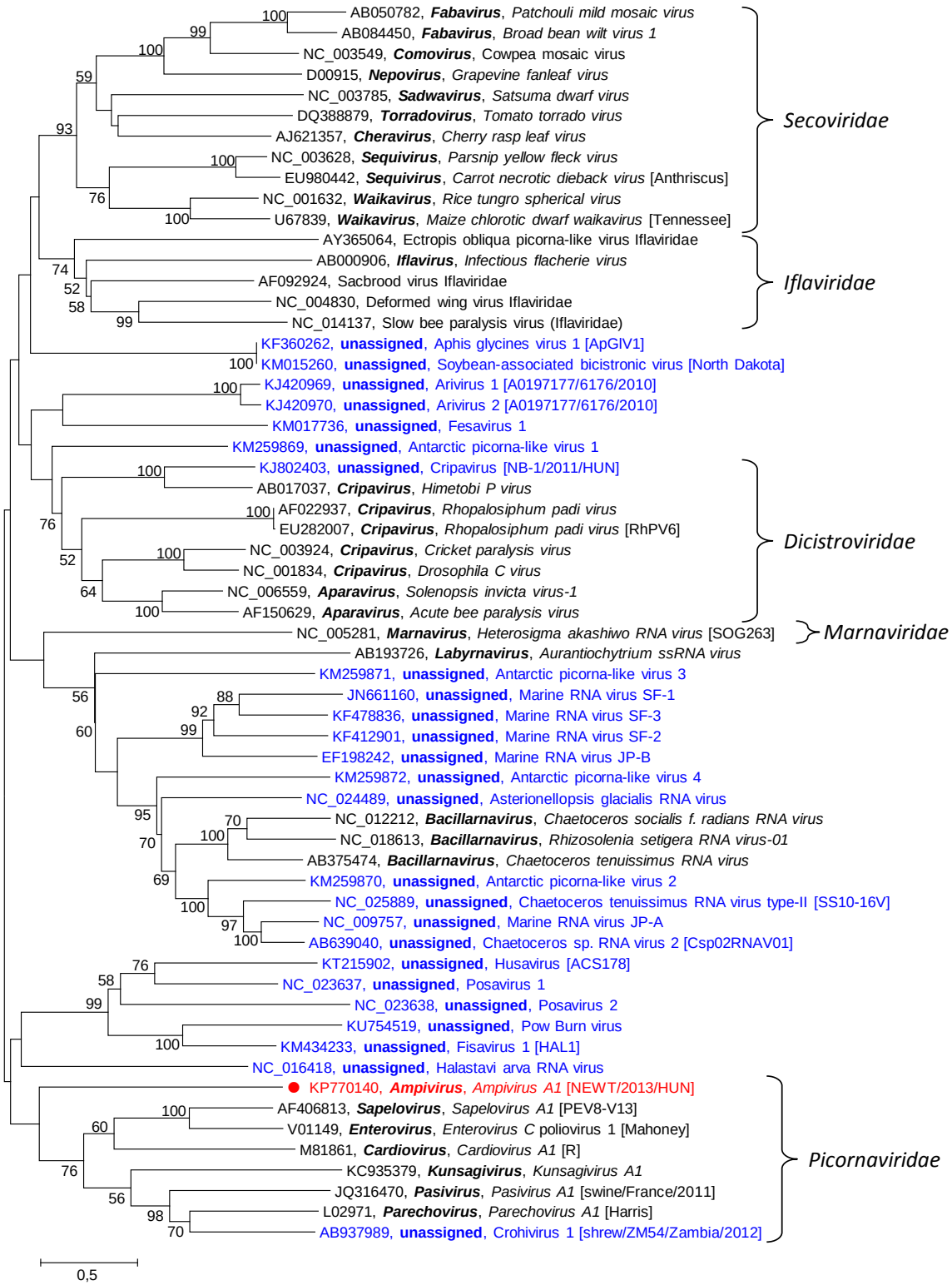
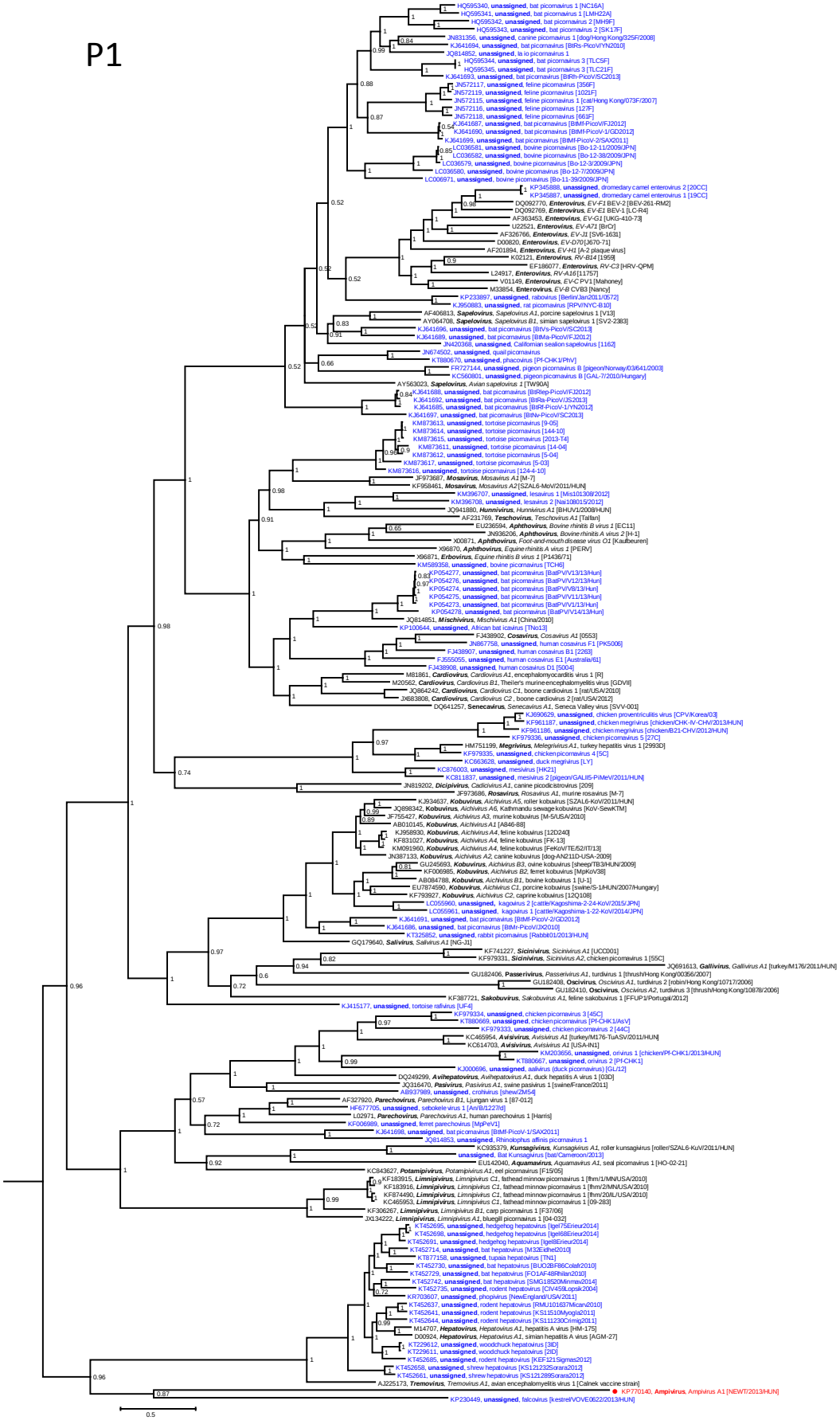


Figure 2: Phylogenetic analyses of the 3CD protein of representative members of the *Picornavirales* using maximum likelihood tree inference (MEGA 5.2). 60 sequences were retrieved from GenBank. Presented are GenBank accession numbers, ***genus names***, *species names* and *types*. If available, designations of isolates [in square brackets] are given. Yet unassigned viruses are printed in blue. Proposed *Ampivirus* is printed in red and indicated by a dot (●). Numbers at nodes indicate bootstrap values obtained after 200 replications. The optimal substitution model (GTR+G+I) was determined with MEGA 5.2. The scale indicates substitutions/site.

P1


HQ695340, unassigned, bat picornavirus 1 [NC16A]
HQ595341, unassigned, bat picornavirus 1 [LMH22A]
HQ595342, unassigned, bat picornavirus 2 [MH9F]
HQ595343, unassigned, bat picornavirus 2 [SK17F]
JN831356, unassigned, canine picornavirus 1 [dog/HongKong/325F/2008]
KJ641694, unassigned, bat picornavirus [BtRs-PicoV/YN2010]
JQ814852, unassigned, la io picornavirus 1
HQ595344, unassigned, bat picornavirus 3 [TLC5F]
HQ595345, unassigned, bat picornavirus 3 [TLC21F]
KJ641693, unassigned, bat picornavirus [BtRh-PicoV/SC2013]
JN572117, unassigned, feline picornavirus [356F]
JN572119, unassigned, feline picornavirus [1021F]
JN572115, unassigned, feline picornavirus 1 [cat/HongKong/073F/2007]
JN572116, unassigned, feline picornavirus [127F]
JN572118, unassigned, feline picornavirus [661F]
KJ641687, unassigned, bat picornavirus [BtMf-PicoV/FJ2012]
KJ641690, unassigned, bat picornavirus [BtMf-PicoV-1/GD2012]
KJ641699, unassigned, bat picornavirus [BtMf-PicoV-2/SAX2011]
LC036581, unassigned, bovine picornavirus [Bo-12-11/2009/JPN]
LC036582, unassigned, bovine picornavirus [Bo-12-38/2009/JPN]
LC036579, unassigned, bovine picornavirus [Bo-12-3/2009/JPN]
LC036580, unassigned, bovine picornavirus [Bo-12-7/2009/JPN]
LC006971, unassigned, bovine picornavirus [Bo-11-39/2009/JPN]
KP345888, unassigned, dromedary camel enterovirus 2 [20CC]
KP345887, unassigned, dromedary camel enterovirus 1 [19CC]
DQ092770, Enterovirus, EV-F1 BEV-2 [BEV-261-RM2]
DQ092769, Enterovirus, EV-E1 BEV-1 [LC-R4]
AF363453, Enterovirus, EV-G1 [UKG-410-73]
U22521, Enterovirus, EV-A71 [BrCr]
AF326766, Enterovirus, EV-J1 [SV6-1631]
D00820, Enterovirus, EV-D70 [J670-71]
AF201894, Enterovirus, EV-H1 [A-2 plaque virus]
K02121, Enterovirus, RV-B14 [1959]
EF186077, Enterovirus, RV-C3 [HRV-QPM]
L24917, Enterovirus, RV-A16 [11757]
V01149, Enterovirus, EV-C PV1 [Mahoney]
M33854, Enterovirus, EV-B CVB3 [Nancy]
KP233897, unassigned, rabovirus [Berlin/Jan2011/0572]
KJ850883, unassigned, rat picornavirus [RPV/NYC-B10]
AF406813, Sapelovirus, Sapelovirus A1, porcine sapelovirus 1 [V13]
AY064708, Sapelovirus, Sapelovirus B1, simian sapelovirus 1 [SV2-2383]
KJ641696, unassigned, bat picornavirus [BtVs-PicoV/SC2013]
KJ641689, unassigned, bat picornavirus [BtMa-PicoV/FJ2012]
JN420368, unassigned, Californian sealion sapelovirus [1162]
JN674502, unassigned, quail picornavirus
KT880670, unassigned, phacovirus [PI-CHK1/PhV]
FR727144, unassigned, pigeon picornavirus B [pigeon/Norway/03/641/2003]
KC560801, unassigned, pigeon picornavirus B [GAL-7/2010/Hungary]
AY563023, Sapelovirus, Avian sapelovirus 1 [TW90A]
KJ641688, unassigned, bat picornavirus [BtRep-PicoV/FJ2012]
KJ641692, unassigned, bat picornavirus [BtRa-PicoV/JS2013]
KJ641685, unassigned, bat picornavirus [BtRf-PicoV-1/YN2012]
KJ641697, unassigned, bat picornavirus [BtNv-PicoV/SC2013]
KM873613, unassigned, tortoise picornavirus [9-05]
KM873614, unassigned, tortoise picornavirus [144-10]
KM873615, unassigned, tortoise picornavirus [2013-T4]
KM873611, unassigned, tortoise picornavirus [14-04]
KM873612, unassigned, tortoise picornavirus [5-04]
KM873617, unassigned, tortoise picornavirus [5-03]
KM873616, unassigned, tortoise picornavirus [124-4-10]
JF973687, Mosavirus, Mosavirus A1 [M-7]
KF958461, Mosavirus, Mosavirus A2 [SZAL6-MoV/2011/HUN]
KM396707, unassigned, lesavirus 1 [MS1013092012]
KM396708, unassigned, lesavirus 2 [Nia108015/2012]
JQ941880, Hunnivirus, Hunnivirus A1 [BHUV1/2008/HUN]
AF231769, Teschovirus, Teschovirus A1 [Talfan]
EU236594, Aphthovirus, Bovine rhinitis B virus 1 [EC11]
JN936206, Aphthovirus, Bovine rhinitis A virus 2 [H-1]
X00871, Aphthovirus, Foot-and-mouth disease virus O1 [Kaufbeuren]
X96870, Aphthovirus, Equine rhinitis A virus 1 [PERV]
X96871, Erbovirus, Equine rhinitis B virus 1 [P143671]
KM589358, unassigned, bovine picornavirus [TCH6]
KP054277, unassigned, bat picornavirus [BatPV/V13/13/Hun]
KP054276, unassigned, bat picornavirus [BatPV/V12/13/Hun]
KP054274, unassigned, bat picornavirus [BatPV/V8/13/Hun]
KP054275, unassigned, bat picornavirus [BatPV/V11/13/Hun]
KP054273, unassigned, bat picornavirus [BatPV/V1/13/Hun]
KP054278, unassigned, bat picornavirus [BatPV/V14/13/Hun]
JQ814851, Mischivirus, Mischivirus A1 [China/2010]
KP100644, unassigned, African bat icavirus [TN13]
FJ438902, Cosavirus, Cosavirus A1 [0553]
JN867758, unassigned, human cosavirus F1 [PK5006]
FJ438907, unassigned, human cosavirus B1 [2263]
FJ555055, unassigned, human cosavirus E1 [Australia/61]
FJ438908, unassigned, human cosavirus D1 [5004]
M81861, Cardiovirus, Cardiovirus A1, encephalomyocarditis virus 1 [R]
M20562, Cardiovirus, Cardiovirus B1, Theiler's murine encephalomyelitis virus [GDVII]
JQ864242, Cardiovirus, Cardiovirus C1, boone cardiovirus 1 [rat/USA/2010]
JX683808, Cardiovirus, Cardiovirus C2 , boone cardiovirus 2 [rat/USA/2012]
DQ641257, Senecavirus, Senecavirus A1, Seneca Valley virus [SVV-001]
KJ690629, unassigned, chicken proventriculitis virus [CPV/Korea/03]
KP961187, unassigned, chicken megrivirus [chicken/CHK-IV-CHV/2013/HUN]
KP961186, unassigned, chicken megrivirus [chicken/B21-CHV/2012/HUN]
KF979336, unassigned, chicken picornavirus 5 [27C]
HM751199, Megrivirus, Melegrivirus A1, turkey hepatitis virus 1 [2993D]
KF979335, unassigned, chicken picornavirus 4 [5C]
KC663628, unassigned, duck megrivirus [LY]
KC876003, unassigned, mesivirus [HK21]
KC811837, unassigned, mesivirus 2 [pigeon/GALII5-PiMeV/2011/HUN]
JN819202, Dicipivirus, Cadicivirus A1, canine picodicistrovirus [209]
JF973686, Rosavirus, Rosavirus A1, murine rosavirus [M-7]
KJ934637, Kobuvirus, Aichivirus A5, roller kobuvirus [SZAL6-KoV/2011/HUN]
JQ898342, Kobuvirus, Aichivirus A6, Kathmandu sewage kobuvirus [KoV-SewKTM]
JF755427, Kobuvirus, Aichivirus A3, murine kobuvirus [M-5/USA/2010]
AB010145, Kobuvirus, Aichivirus A1 [AB46-88]
KJ958930, Kobuvirus, Aichivirus A4, feline kobuvirus [12D240]
KF831027, Kobuvirus, Aichivirus A4, feline kobuvirus [FK-13]
KM091960, Kobuvirus, Aichivirus A4, feline kobuvirus [FeKoV/TE52/IT/13]
JN387133, Kobuvirus, Aichivirus A2, canine kobuvirus [dog-AN211D-USA-2009]
GU245693, Kobuvirus, Aichivirus B3, ovine kobuvirus [sheep/TB3/HUN/2009]
KF006985, Kobuvirus, Aichivirus B2, ferret kobuvirus [MpKoV/88]
AB084788, Kobuvirus, Aichivirus B1, bovine kobuvirus 1 [U-1]
EU87474590, Kobuvirus, Aichivirus C1, porcine kobuvirus [swine/S-1/HUN/2007/Hungary]
KF793927, Kobuvirus, Aichivirus C2, caprine kobuvirus [1QQ108]
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LC055961, unassigned, kagovirus 1 [cattle/Kagoshima-1-22-KoV/2014/JPN]
KJ641691, unassigned, bat picornavirus [BtMf-PicoV-3/GD2012]
KJ641686, unassigned, bat picornavirus [BtMv-PicoV/JX2010]
KT325852, unassigned, rabbit picornavirus [Rabbit01/2013/HUN]
GQ179640, Salivirus, Salivirus A1 [NG-J1]
KF741227, Sicinivirus, Sicinivirus A1 [UCC001]
KF979331, Sicinivirus, Sicinivirus A2, chicken picornavirus 1 [55C]
JQ691613, Gallivirus, Gallivirus A1 [turkey/M176/2011/HUN]
GU182406, Passerivirus, Passerivirus A1, turdivirus 1 [thrush/Hong Kong/00356/2007]
GU182408, Oscivirus, Oscivirus A1, turdivirus 2 [robin/Hong Kong/10717/2006]
GU182410, Oscivirus, Oscivirus A2, turdivirus 3 [thrush/Hong Kong/10878/2006]
KF387721, Sakobuvirus, Sakobuvirus A1, feline sakobuvirus 1 [FFUP1/Portugal/2012]
KJ415177, unassigned, tortoise rafivirus [UF4]
KF979334, unassigned, chicken picornavirus 3 [45C]
KT880669, unassigned, chicken picornavirus [PI-CHK1/AsV]
KF979333, unassigned, chicken picornavirus 2 [44C]
KC465954, Avisivirus, Avisivirus A1 [turkey/M176-TuASV/2011/HUN]
KC614703, Avisivirus, Avisivirus A1 [USA-IN1]
KM203656, unassigned, orivirus 1 [chicken/PI-CHK1/2013/HUN]
KT880667, unassigned, orivirus 2 [PI-CHK1]
KJ000696, unassigned, aalivirus (duck picornavirus) [GL/12]
DQ249299, Avihepatovirus, Avihepatovirus A1, duck hepatitis A virus 1 [03D]
JQ316470, Pasivirus, Pasivirus A1, swine pasivirus 1 [swine/France/2011]
AB937989, unassigned, crohivirus [shew/ZM54]
AF327920, Parechovirus, Parechovirus B1, Ljungan virus 1 [87-012]
HF677705, unassigned, sebokele virus 1 [An/Bt1227/d]
L02971, Parechovirus, Parechovirus A1, human parechovirus 1 [Harris]
KF006989, unassigned, ferret parechovirus [MpPeV1]
KJ641698, unassigned, bat picornavirus [BtMf-PicoV-1/SAX2011]
JQ814853, unassigned, Rhinolophus affinis picornavirus 1
KC935379, Kunsagivirus, Kunsagivirus A1, roller kunsagivirus [roller/SZAL6-KuV/2011/HUN]
unassigned, Bat Kunsagivirus [bat/Cameroon/2013]
EU142040, Aquamavirus, Aquamavirus A1, seal picornavirus 1 [HO-02-21]
KC843627, Potamipivirus, Potamipivirus A1, eel picornavirus [F15/05]
KF183915, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [fhm/1/MN/USA/2010]
KF183916, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [fhm/2/MN/USA/2010]
KF874490, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [fhm/20IL/USA/2010]
KC465953, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [09-283]
KF306267, Limnipivirus, Limnipivirus B1, carp picornavirus 1 [F37/06]
JX134222, Limnipivirus, Limnipivirus A1, bluegill picornavirus 1 [04-032]
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KT452729, unassigned, bat hepatovirus [FO1AF48Rhilan2010]
KT452742, unassigned, bat hepatovirus [SMG18520Minnrav2014]
KT452735, unassigned, rodent hepatovirus [CtV459Lopsk2004]
KR703607, unassigned, phopivirus [NewEnglandUSA/2011]
KT452637, unassigned, rodent hepatovirus [RMU101637Micsan2010]
KT452641, unassigned, rodent hepatovirus [KS11510Myogla2011]
KT452644, unassigned, rodent hepatovirus [KS11230Crimig2011]
M14707, Hepatovirus, Hepatovirus A1, hepatitis A virus [HM-175]
D00924, Hepatovirus, Hepatovirus A1, simian hepatitis A virus [AGM-27]
KT229612, unassigned, woodchuck hepatovirus [3ID]
KT229611, unassigned, woodchuck hepatovirus [2ID]
KT452685, unassigned, rodent hepatovirus [KEF121Sigmas2012]
KT452658, unassigned, shrew hepatovirus [KS121232Sorara2012]
KT452661, unassigned, shrew hepatovirus [KS121289Sorara2012]
AJ225173, Tremovirus, Tremovirus A1, avian encephalomyelitis virus 1 [Calnek vaccine strain]
KP770140, Ampivirus, Ampivirus A1 [NEWT/2013/HUN]
KP230449, unassigned, falcovirus [kestrel/VOVE0622/2013/HUN]
0.5

Figure 3 (previous page): Phylogenetic analyses of picornavirus P1 using Bayesian tree inference (MrBayes 3.2). 178 picornavirus sequences were retrieved from GenBank. Presented are GenBank accession numbers, ***genus names***, *species names* and *types*. If available, common names and designations of isolates [in square brackets] are given. Yet unassigned viruses are printed in blue. Proposed name is printed in red and indicated by a dot (●). Numbers at nodes indicate posterior probabilities obtained after 6,000,000 generations. The optimal substitution model (GTR+G+I) was determined with MEGA 5. The scale indicates substitutions/site.

3CD


KJ958930, Kobuvirus, Aichivirus A4, feline kobuvirus [12D240]
KM091960, Kobuvirus, Aichivirus A4, feline kobuvirus [FeKoV/TE/52/IT/13]
KF831027, Kobuvirus, Aichivirus A4, feline kobuvirus [FK-13]
JN087133, Kobuvirus, Aichivirus A2, canine kobuvirus 1 [dog-AN211D-USA-2009]
JF755427, Kobuvirus, Aichivirus A3, murine kobuvirus 1 [M-5-USA-2010]
AB010145, Kobuvirus, Aichivirus A1 [A846-88]
JQ898342, Kobuvirus, Aichivirus A6, Kathmandu sewage kobuvirus [KoV-SewKTM]
KJ934637, Kobuvirus, Aichivirus A5, roller kobuvirus [SZAL6-KoV/2011/HUN]
AB084788, Kobuvirus, Aichivirus B1, bovine kobuvirus 1 [U-1]
GU245693, Kobuvirus, Aichivirus B3, ovine kobuvirus [sheep/TB3/HUN/2009]
KE006985, Kobuvirus, Aichivirus B2, ferret kobuvirus [ferret/MpKoV38/NL/2010]
EU787450, Kobuvirus, Aichivirus C1, porcine kobuvirus 1 [swS-1/HUN/2007]
KF793927, Kobuvirus, Aichivirus C2, caprine kobuvirus [12Q108]
LC055960, unassigned, kagovirus 2 [cattle/Kagoshima-2-24-KoV/2015/JPN]
LC055961, unassigned, kagovirus 1 [cattle/Kagoshima-1-22-KoV/2014/JPN]
GQ179640, Salivirus, Salivirus A1 [hu/NG-J1/Nigeria/2007]
JQ691613, Gallivirus, Gallivirus A1 [turkey/HUN/M176/2011]
GU182406, Passerivirus, Passerivirus A1, turdivirus 1 [thrush/Hong Kong/00356/2007]
KF741227, Sicinivirus, Sicinivirus A1 [chicken/UCC001/Eire]
KF979331, Sicinivirus, Sicinivirus A1 [ChPV-1/chicken/55C/Hong Kong/2008]
KF387721, Sakobuvirus, Sakobuvirus A1 [FFUP1/Portugal/2012]
KJ641686, unassigned, bat picornavirus [BtMf-PicoV/JX2010]
KJ641691, unassigned, bat picornavirus [BtMf-PicoV-2/GD2012]
KT325852, unassigned, rabbit picornavirus [Rabbit01/2013/HUN]
GU182408, Oscivirus, Oscivirus A1, turdivirus 2 [robin/Hong Kong/10717/2006]
GU182410, Oscivirus, Oscivirus A2, turdivirus 3 [robin/Hong Kong/108787/2006]
KJ415177, unassigned, tortoise rafivirus [UF4]
KF961186, unassigned, chicken megrivirus [chicken/B21-CHV/2012/HUN]
KF961187, unassigned, chicken megrivirus [chicken/CHK-IV-CHV/2013/HUN]
KJ690629, unassigned, chicken proventriculitis virus [CPV/Korea/03]
HM751199, Megrivirus, Melegrivirus A1, turkey hepatitis virus [2993D]
KF979336, unassigned, chicken picornavirus 5 [27C]
KF979335, unassigned, chicken picornavirus 4 [5C]
KC663628, unassigned, duck megrivirus [LY]
KC811837, unassigned, pigeon mesivirus 2 [pigeon/GALIIS-PiMeV/2011/HUN]
KC876003, unassigned, mesivirus 1 [HK21]
JN819202, Dicipivirus, Cadicivirus A1, canine picodicistrovirus [209]
JF973686, Rosavirus, Rosavirus A1 [mouse/USA/M-7/2010]
KP054278, unassigned, bat picornavirus [BatPV/V14/13/Hun]
KP054276, unassigned, bat picornavirus [BatPV/V12/13/Hun]
KP054275, unassigned, bat picornavirus [BatPV/V11/13/Hun]
KP054277, unassigned, bat picornavirus [BatPV/V13/13/Hun]
KP054274, unassigned, bat picornavirus [BatPV/V8/13/Hun]
KP054273, unassigned, bat picornavirus [BatPV/V1/13/Hun]
JQ814851, Mischivirus, Mischivirus A1 [bat/China/2010]
KP100644, unassigned, African bat icavirus [TNb13]
M20562, Cardiovirus, Cardiovirus B1, Theiler's murine encephalomyelitis virus [GDVII]
M81861, Cardiovirus, Cardiovirus A1, encephalomyocarditis virus 1 [R]
JQ864242, Cardiovirus, Cardiovirus C1, Boone cardiovirus 1 [rat/USA/2010]
JX683808, Cardiovirus, Cardiovirus C2, Boone cardiovirus 2 [rat/USA/2012]
DQ641257, Senecavirus, Senecavirus A1, Seneca Valley virus 1 [cc/US/SVV-001]
FJ438908, unassigned, human cosavirus D1 [5004]
FJ555055, unassigned, human cosavirus E1 [Australia/61]
FJ438907, unassigned, human cosavirus B1 [2263]
FJ438902, Cosavirus, Cosavirus A1 [0553]
JN867758, unassigned, human cosavirus F1 [PK5006]
EU236594, Aphthovirus, Bovine rhinitis B virus 1 [EC11]
JN836206, Aphthovirus, Bovine rhinitis A virus 2 [H-1]
X00871, Aphthovirus, Foot-and-mouth disease virus O1 [Kaufbeuren]
X96870, Aphthovirus, Equine rhinitis A virus 1 [PERV]
KM396707, unassigned, lesavirus 1 [Mis101308/2012]
KM396708, unassigned, lesavirus 2 [Nai108015/2012]
JQ941880, Hunnivirus, Hunnivirus A1 [cattle/HUN/2008]
AF231769, Teschovirus, Teschovirus A1, porcine teschovirus 1 [Talfan]
X96871, Erbovirus, Erbovirus A1, equine rhinitis B virus 1 [P14367]
KM589358, unassigned, bovine erbo-like picornavirus [TCH6]
KM873613, unassigned, tortoise picornavirus [9-05]
KM873614, unassigned, tortoise picornavirus [144-10]
KM873615, unassigned, tortoise picornavirus [2013-T4]
KM873612, unassigned, tortoise picornavirus [5-04]
KM873611, unassigned, tortoise picornavirus [14-04]
KM873616, unassigned, tortoise picornavirus [124-4-10]
KM873617, unassigned, tortoise picornavirus [5-03]
JF973687, Mosavirus, Mosavirus A1 [mouse/M-7/USA/2010]
KF958461, Mosavirus, Mosavirus A2 [SZAL6-MoV/2011/HUN]
JN572117, unassigned, feline picornavirus [356F]
JN572119, unassigned, feline picornavirus [1021F]
JN572115, unassigned, feline picornavirus [cat/Hong Kong/073F/20079
JN572116, unassigned, feline picornavirus [127F]
JN572118, unassigned, feline picornavirus [661F]
KJ641687, unassigned, bat picornavirus [BtMf-PicoV/FJ2012]
KJ641699, unassigned, bat picornavirus [BtMf-PicoV-2/SAX2011]
KJ641690, unassigned, bat picornavirus [BtMf-PicoV-1/GD2012]
HQ595344, unassigned, bat picornavirus [TLC5F]
HQ595345, unassigned, bat picornavirus [TLC21F]
KJ641693, unassigned, bat picornavirus [BtRh-PicoV/SC2013]
HQ595340, unassigned, bat picornavirus [NC16A]
HQ595341, unassigned, bat picornavirus [LMH22A]
HQ595342, unassigned, bat picornavirus [MH9F]
HQ595343, unassigned, bat picornavirus [SK17F]
JQ814852, unassigned, Ia io picornavirus 1
KJ641694, unassigned, bat picornavirus [BtRs-PicoV/YN2010]
JN831356, unassigned, canine picornavirus [dog/Hong Kong/325F/2008]
LC036579, unassigned, bovine picornavirus [Bo-12-3/2009/JPN]
LC036581, unassigned, bovine picornavirus [Bo-12-11/2009/JPN]
LC036580, unassigned, bovine picornavirus [Bo-12-7/2009/JPN]
LC036582, unassigned, bovine picornavirus [Bo-12-38/2009/JPN]
LC006971, unassigned, bovine picornavirus [Bo-11-39/2009/JPN]
AF406813, Sapelovirus, Sapelovirus A1, porcine sapelovirus 1 [V13]
AY064708, Sapelovirus, Sapelovirus B1, simian sapelovirus 1 [SV2-2383]
KJ641696, unassigned, bat picornavirus [BtVs-PicoV/SC2013]
KJ641689, unassigned, bat picornavirus [BtMa-PicoV/FJ2012]
AY563023, Sapelovirus, Avian sapelovirus 1 [TW90A]
JN420368, unassigned, Californian seallion sapelovirus [1162]
KJ641688, unassigned, bat picornavirus [BtRep-PicoV/FJ2012]
KJ641692, unassigned, bat picornavirus [BtRa-PicoV/JS2013]
KJ641685, unassigned, bat picornavirus [BtRf-PicoV-1/YN2012]
KJ641697, unassigned, bat picornavirus [BtNv-PicoV/SC2013]
M33854, Enterovirus, EV-B CV-B3 [Nancy]
AF326766, Enterovirus, EV-J1 [SV6-1631]
D00820, Enterovirus, EV-D70 [J670-71]
V01149, Enterovirus, EV-C PV1 [Mahoney]
U22521, Enterovirus, EV-A71 [BrCr]
KP345888, unassigned, Dromedary camel enterovirus 2 [20CC]
KP345887, unassigned, Dromedary camel enterovirus 1 [19CC]
DQ092770, Enterovirus, EV-F1 BEV-2 [BEV-261 RM2]
DQ092769, Enterovirus, EV-E1 BEV-1 [LC-R4]
AF363453, Enterovirus, EV-G1 [UKG/410/73]
AF201894, Enterovirus, EV-H1 [A-2 plaque virus]
L24917, Enterovirus, RV-A16 [11757]
EF186077, Enterovirus, RV-C3 [HRV-QPM]
K02121, Enterovirus, RV-B14 [1959]
KP233897, unassigned, rabovirus [Berlin/Jan2011/0572]
KJ950883, unassigned, rat picornavirus [rat/NYC-B10/USA/2010]
FR727144, unassigned, pigeon picornavirus B [pigeon/Norway/03/641/2003]
KC560801, unassigned, pigeon picornavirus B [GAL-7/2010/Hungary]
FR727145, unassigned, pigeon picornavirus A [pigeon/Norway/03/603-7/2003]
JN674502, unassigned, quail picornavirus 1 [quail/HUN/2010]
KT880670, unassigned, phacovirus [Pf-CHK1/Phv]
KP230449, unassigned, falcovirus [kestrel/VOVE0622/2013/HUN]
KJ641684, unassigned, bat picornavirus [BtRf-PicoV-2/YN2012]
KT452637, unassigned, rodent hepatovirus [RMU101637Micarv2010]
KT452641, unassigned, rodent hepatovirus [KS11510Myoglis2011]
KT452644, unassigned, rodent hepatovirus [KS111230Crimg2011]
KT229612, unassigned, woodchuck hepatovirus [3ID]
KT229611, unassigned, woodchuck hepatovirus [2ID]
KT452585, unassigned, rodent hepatovirus [KEF121Sigmas2012]
M14707, Hepatovirus, Hepatovirus A1, hepatitis A virus [HM-175]
D00924, Hepatovirus, Hepatovirus A1, simian hepatitis A virus [AGM-27]
KT452658, unassigned, shrew hepatovirus [KS121232Sorara2012]
KT452661, unassigned, shrew hepatovirus [KS121289Sorara2012]
KT452695, unassigned, hedgehog hepatovirus [Igel75Erieur2014]
KT452698, unassigned, hedgehog hepatovirus [Igel68Erieur2014]
KT452691, unassigned, hedgehog hepatovirus [Igel8Erieur2014]
KT452714, unassigned, bat hepatovirus [M32Eidhel2010]
KT877158, unassigned, tupaia hepatovirus [TN1]
KT452730, unassigned, bat hepatovirus [BUO2BF86Colafr2010]
KT452729, unassigned, bat hepatovirus [FO1AF48Rhiian2010]
KR703607, unassigned, phopivirus [NewEngland/USA/2011]
KT452742, unassigned, bat hepatovirus [SM518520Minnav2014]
KT452735, unassigned, rodent hepatovirus [CV459Logski2004]
AJ225173, Tremovirus, Tremovirus A1, avian encephalomyelitis virus 1 [Calnek vaccine strain]
KF183915, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [fhm/1/MN/USA/2010]
KF183916, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [fhm/2/MN/USA/2010]
KF874490, Limnipivirus, Limnipivirus C1, fathead minnow picornavirus 1 [fhm/20/IL/USA/2010]
KF306267, Limnipivirus, Limnipivirus B1, carp picornavirus 1 [F37/06]
JX134222, Limnipivirus, Limnipivirus A1, bluegill picornavirus 1 [04-032]
KC843627, Potamipivirus, Potamipivirus A1, eel picornavirus 1 [F15/05]
KJ641698, unassigned, bat picornavirus [BtMf-PicoV-1/SAX2011]
AF327920, Parechovirus, Parechovirus B1, Ljungan virus 1 [87-012]
HF677705, unassigned, sebokele virus 1 [An/B/1227/d]
L02971, Parechovirus, Parechovirus A1, human parechovirus 1 [Harris]
KF006989, unassigned, ferret parechovirus [ferret/MpPeV1/NL]
JQ316470, Pasivirus, Pasivirus A1 [swine/France/2011]
AB937989, unassigned, crohivirus 1 [shrew/ZM54/Zambia/2012]
KC465954, Avisivirus, Avisivirus A1 [turkey/M176-TuASV/2011/HUN]
KC614703, Avisivirus, Avisivirus A1 [turkey/USA/IN1/2010]
KF979334, unassigned, chicken picornavirus 3 [45C]
KT880669, unassigned, chicken picornavirus [Pf-CHK1/AsV]
KF979333, unassigned, chicken picornavirus 2 [44C]
KJ000696, unassigned, aalivirus [duck/GL/12/China/2012]
KM203656, unassigned, orivirus 1 [chicken/Pf-CHK1/2013/HUN]
KT880667, unassigned, orivirus 2 [Pf-CHK1]
DQ249299, Avihepatovirus, Avihepatovirus A1, duck hepatitis A virus 1 [03D]
KC935379, Kunsagivirus, Kunsagivirus A1 [roller/SZAL6-KuV/2011/HUN]
unassigned, bat kunsagivirus
EU142040, Aquamavirus, Aquamavirus A1, seal picornavirus 1 [HO-02-21]
KP770140, Ampivirus, Ampivirus A1 [NEWT/2013/HUN]
0.5

Figure 4 (previous page): Phylogenetic analyses of picornavirus 3CD gene regions using Bayesian tree inference (MrBayes 3.2). 178 sequences were retrieved from GenBank. Presented are GenBank accession numbers, ***genus names***, *species names* and *types*. If available, common names and designations of isolates [in square brackets] are given. Yet unassigned viruses are printed in blue. Proposed names are printed in red and indicated by a dot (●). Numbers at nodes indicate posterior probabilities obtained after 4,750,000 generations. The optimal substitution model (GTR+G+I) was determined with MEGA 5. The scale indicates substitutions/site.