

Supplementary dataset 2. Newick format of the phylogeny of the non-recombinant portion of cVDPV2 sequences, based on synonymous substitutions.

```
(KDS05-01:0.004644,KNS06-14:0.010733,((((((((((((SOS07-05:0.004235,
((SOS08-07:0.008478,ZAS08-01:0.002723):0.002336,SOS08-02:0.005641):
0.002330):0.000403,(KBS09-02:0.007947,SOS08-01:0.001375):0.003729):
0.000000,(SOS07-04:0.000000,SOS07-03:0.000462):0.002779):
0.000000,SOS08-04:0.007440):0.003242,
(((SOS09-02:0.000462,SOS09-03:0.000000):0.015555,KBS07-04:0.006116):
0.000387,KBS07-02:0.002315):0.000000):0.000000,
((NIS08-05:0.003247,KBS08-01:0.003710):0.000000,NIS08-06:0.006975):
0.008847):0.000000,SOS11-01:0.032855):0.011744,KNS06-13:0.005142):
0.002772,(((KNS06-07:0.004695,KTS07-03:0.013636):0.000415,
(KNS07-11:0.003255,KDS07-03:0.002787):0.009369):0.000000,
(KNS06-20:0.007978,KTS07-07:0.008924):0.000874):0.000000):0.003244,
(((JIS07-04:0.003170,JIS08-01:0.006626):0.002793,BAS07-01:0.002018):
0.010616,(((KNS06-10:0.000461,KNS06-09:0.000927):
0.005208,JIS07-05:0.021288):0.001332):0.000469):0.000002,
((KNS06-11:0.005577,((((((BAS08-04:0.012564,
(YBS08-02:0.004975,YBS07-01:0.003871):0.004186):0.007186,
(KNS07-19:0.011651,(KNS06-16:0.003255,KNS06-21:0.006508):0.000509):
0.000447):0.000000,(JIS07-03:0.006494,
(BAS07-04:0.002374,BAS08-01:0.008392):0.003746):0.003783):
0.000457,KNS06-15:0.005585):0.001858,
(JIS06-02:0.002781,JIS06-05:0.001853):0.000000):
0.000927,KNS06-08:0.002782):0.001391,
(((KNS06-04:0.001859,KNS06-12:0.005596):0.001854,
(ZAS07-01:0.006540,KNS06-18:0.004199):0.001845):
0.002797,JIS06-01:0.003256):0.000457):0.000000):0.000000,
(((KNS06-02:0.000000,KNS06-05:0.003711):0.000000,KNS06-03:0.003245):
0.000926,(KTS07-04:0.009860,JIS07-01:0.008363):0.001904):0.001856):
0.000000):0.000000,(BAS07-02:0.007477,(KNS07-12:0.009797,
((((((((KDS07-06:0.005115,((KTS08-02:0.008402,((ZAS08-05:0.002959,
(ZAS09-18:0.008581,ZAS09-13:0.005916):0.002797):
0.007853,KTS08-05:0.010825):0.000372):0.001779,
(KNS07-02:0.002884,KDS07-01:0.006920):0.000449):0.001014):
0.000919,KDS07-05:0.004656):0.002795,
((((((((((((((((JIS09-07:0.003262,ADS09-01:0.007008):0.001849,
((KNS09-24:0.000463,KNS09-23:0.000000):0.003248,
(KNS09-25:0.004647,JIS09-02:0.000928):0.000462):0.000000):0.000000,
(KNS09-07:0.001854,KNS09-09:0.002791):0.001391):0.000000,
(KNS09-31:0.006045,JIS09-08:0.006514):0.000000):
0.000000,KNS09-15:0.005112):0.000000,
(JIS09-06:0.002790,JIS09-05:0.003256):0.000457):
0.000000,KNS09-26:0.005579):0.000463,JIS09-12:0.005119):
0.000463,KNS09-06:0.004646):0.000463,(KNS09-38:0.010738,
(NAS09-03:0.002792,NAS09-01:0.000921):0.004660):0.000000):0.000000,
(KDS10-01:0.007985,KNS10-03:0.008458):0.009382):0.006346,
(KTS09-02:0.006992,BAS08-05:0.003267):0.002508):
0.000456,KNS08-03:0.002627):0.006773,BAS09-01:0.016935):
0.002870,KTS07-08:0.006533):0.001384,KNS07-08:0.007447):0.000000):
0.001853,(((KNS06-23:0.006543,KNS07-05:0.004198):
0.000901,KDS07-08:0.008874):0.001863,KNS06-06:0.001389):0.000000,
(((KNS07-04:0.000916,KNS07-18:0.006057):0.002333,KNS07-09:0.002321):
```

0.005173,(SOS08-06:0.002282,KNS08-02:0.007037):0.013717):0.000880):
0.000000):0.000000,((((((KNS06-19:0.002149,KNS07-06:0.002021):
0.000000,(KNS07-24:0.007468,KNS07-10:0.001386):0.001563):
0.003087,KNS06-17:0.004191):0.000919,
(KNS07-16:0.007040,KNS07-26:0.014602):0.002287):0.000000,
((((((ZAS09-03:0.000459,ZAS09-01:0.001394):
0.005629,ZAS09-15:0.004646):0.005649,
(((ZAS08-10:0.004175,ZAS08-06:0.001852):0.000000,ZAS08-08:0.004180):
0.000000,(ZAS09-04:0.002187,ZAS09-06:0.002923):
0.000917,ZAS09-07:0.001996):0.007803):0.000468):
0.009854,ZAS07-02:0.005129):0.007516,
(KNS07-21:0.004651,KNS08-01:0.011741):0.003719):
0.000000,KDS07-04:0.006062):0.002304):0.002781,
(((ZAS07-03:0.010271,KDS07-02:0.000000):0.001389,KNS07-23:0.006989):
0.001390,KNS06-22:0.002323):0.002788):0.000000,(KNS07-20:0.007809,
(KNS07-15:0.002199,KNS07-27:0.010411):0.002809):0.000567,
(((KNS07-25:0.006042,KTS07-01:0.001388):
0.000000,KTS07-02:0.003244):0.000000,(KNS07-28:0.005197,
(KTS07-06:0.000987,NAS08-01:0.008800):0.000430):0.007419):0.000462,
(KTS07-11:0.008429,KTS07-10:0.006083):0.000892):0.002786):0.000463):
0.000463):0.000000,KDS07-07:0.010261):0.000463,
((((((((KBS09-01:0.005084,KBS10-01:0.020491):0.008011,
(ZAS08-13:0.003255,(((ZAS09-17:0.011284,NIS09-04:0.007056):
0.000866,(((NIS09-09:0.006063,
(NIS09-08:0.005132,NIS09-10:0.003257):0.001369):
0.000000,ZAS09-08:0.004661):0.000000,NIS09-02:0.001868):
0.001376,KDS09-05:0.006509):0.000000):0.001391,ZAS08-12:0.002785):
0.000932,(ZAS08-09:0.000000,ZAS08-11:0.002316):0.000921):0.001859):
0.000460,(ZAS08-04:0.000463,ZAS08-07:0.000925):0.000000,
(ZAS08-14:0.005116,(ZAS09-09:0.010762,ZAS09-02:0.005606):0.000914):
0.000460,(NIS09-05:0.002786,NIS09-07:0.003730):0.004661):0.000463):
0.000459):0.001401):0.000456,
(((NIS08-02:0.001389,NIS08-03:0.000000):0.000000,NIS08-04:0.000463):
0.000000,NIS08-01:0.001852):0.000000):0.004188,KBS07-01:0.000457):
0.000468,KBS07-03:0.009817):0.000000,KBS08-02:0.020705):
0.005127,KDS06-02:0.000927):0.000461,
(KDS06-03:0.002782,KDS06-01:0.000000):0.000000):
0.000000,KNS07-01:0.004641):0.003245):0.000000,
(((KTS07-12:0.000435,KTS08-01:0.003743):0.010358,KTS07-05:0.005113):
0.007030,(KNS07-17:0.006583,KNS07-13:0.011287):0.001325,
(KNS07-07:0.006005,(KNS07-03:0.006129,ZAS08-02:0.017874):0.000898):
0.001903,(((BAS07-03:0.002805,BAS08-03:0.010764):
0.000421,BAS07-05:0.011230):0.002340,(SOS08-03:0.001475,
(((KDS09-10:0.007922,(KNS10-02:0.018225,KTS09-09:0.006896):
0.000832,(KNS09-30:0.000921,KDS09-12:0.002790):0.003568):0.001094):
0.000601,(((KNS09-32:0.001857,KNS09-11:0.002320):
0.001407,KNS10-10:0.022192):0.000428,KNS09-33:0.004666):
0.004752,KGS08-01:0.004106):0.001856):0.003980,ZAS08-03:0.004270):
0.000913):0.007870,(((KTS08-03:0.000000,KTS08-04:0.001389):
0.003714,ZAS09-14:0.015133):0.006107,KTS07-09:0.006047):0.000933):
0.001859):0.002329,(KNS07-22:0.006651,(KNS07-14:0.003607,
(YBS09-04:0.008451,BOS09-02:0.002354):0.013114,
((((YBS09-02:0.011795,KNS09-08:0.008002):0.004156,
(JIS08-05:0.007938,(JIS09-09:0.012690,JIS08-04:0.002324):0.001858):

0.000916):0.002172,JIS08-02:0.004345):0.002779,YBS09-03:0.012974):
0.003899,JIS07-06:0.004644):0.000000,
(((((((KDS09-11:0.007495,BNS09-01:0.006079):
0.000425,NAS09-04:0.006991):0.000929,JIS09-04:0.002783):
0.000934,JIS09-11:0.006516):0.011227,(((KNS09-02:0.002315,
((KNS09-12:0.003245,KNS09-03:0.003710):0.000000,KDS09-06:0.004175):
0.000000):0.000473,KNS09-37:0.011207):0.002335,
(KNS09-19:0.002316,KNS09-18:0.004657):0.003299):0.004781):0.000415,
(((((((KTS09-28:0.011726,(KNS09-22:0.007003,KNS09-28:0.002789):
0.003285):0.000902,(KDS09-02:0.009336,KNS09-05:0.003245):
0.000000,KNS09-17:0.006515):0.000462):0.000926,KTS09-21:0.008387):
0.000000,(((KTS09-18:0.003730,KTS09-25:0.003724):0.004670,
(KNS09-34:0.006542,KNS09-27:0.004669):0.000908,
(SOS09-05:0.007516,KTS09-32:0.010331):0.000403,((KTS09-01:0.001389,
(((((((KTS09-15:0.004657,KDS09-07:0.002793):0.000919,
(KDS09-03:0.002783,KTS09-10:0.002319):0.000927):0.000000,
(((KTS09-06:0.000000,NIS09-03:0.004176):
0.000000,KDS09-01:0.002782):0.000000,
(KNS09-29:0.006066,KTS09-29:0.007002):0.000916):0.000000,
((KTS09-22:0.000927,KNS09-20:0.004655):0.000926,KNS09-10:0.002779):
0.000000):0.000463):0.000000,ZAS09-19:0.006051):0.000000,
(KTS09-26:0.003719,KTS09-20:0.003254):0.002791):0.000000,
(KDS09-04:0.002322,ZAS09-11:0.001387):0.005133,
(KTS09-23:0.003722,KTS09-13:0.002790):0.000456):0.000463):0.000000,
(KTS09-30:0.008424,KTS09-17:0.004674):0.000432):0.000000,
(NAS09-02:0.004186,ZAS09-16:0.002792):0.000455):0.000000,
((KTS09-11:0.003712,(KNS09-36:0.002781,KTS09-08:0.002781):0.000000):
0.000927,KDS09-09:0.006054):0.000926):0.000000):0.000000,
(KNS10-01:0.007013,(((KNS11-08:0.018091,KNS10-08:0.005561):
0.000850,KNS10-11:0.011564):0.001060,
(KBS10-02:0.003259,KBS10-03:0.004661):0.005601):0.000917,
(KDS10-03:0.000908,KDS10-05:0.003734):0.007493):0.002327,
(KDS10-04:0.005108,KNS10-05:0.006978):0.000000):0.004197):0.004656):
0.000000):0.000000):0.000925):0.001394,
(((KTS09-03:0.002779,KTS09-14:0.002780):0.000000,KTS09-16:0.005107):
0.000000,NIS09-06:0.003244):0.001390):0.000462):0.000000,
((KDS09-13:0.006985,(KTS09-19:0.002322,KTS09-27:0.004188):0.002325):
0.000000,ZAS09-12:0.004178):0.003244):0.000000,
(ZAS11-02:0.010430,ZAS11-01:0.007892):0.014663):
0.001855,ZAS09-10:0.004188):0.003144):0.002923,
(((((((KDS10-02:0.025646,KNS08-04:0.001886):0.000423,
(((KNS09-04:0.002323,JIS09-10:0.006527):
0.000947,KTS09-24:0.005100):0.000459,KNS09-14:0.002765):
0.000470,KNS09-35:0.004661):0.003273):0.003766,PLS09-01:0.016959):
0.001353,(((KTS09-07:0.009726,KTS09-31:0.016820):
0.000381,KTS09-12:0.013840):0.002475,
(JIS09-03:0.012634,JIS08-03:0.002316):0.000000):0.001854):0.000931,
(YBS09-01:0.002312,YBS09-05:0.005598):0.005322,
(BOS09-03:0.000000,BOS09-04:0.000463):0.010174):0.005599):
0.000437,BAS08-07:0.007007):0.004219):0.002682,
(((BAS08-08:0.002183,ZAS10-01:0.016159):
0.004438,YBS08-07:0.014671):0.004498,BAS08-02:0.003836):0.001171,
(YBS08-01:0.001380,YBS08-03:0.004196):0.005246,(KTS09-04:0.009324,
((YBS08-05:0.001856,YBS08-04:0.000924):0.002785,YBS08-06:0.002781):

0.000000,(((BOS09-10:0.010439,(BOS09-08:0.004193,
(BOS09-07:0.003253,BOS09-01:0.000925):0.001386):0.003631):
0.001404,BOS09-05:0.010601):0.001048,BOS08-02:0.003214):0.001889,
((((KNS11-01:0.002416,JIS11-14:0.011145):
0.001995,KNS10-09:0.004750):0.004445,KNS10-06:0.001847):
0.007527,KNS09-39:0.003245):0.005600,
((KNS09-16:0.005138,KNS09-21:0.007014):0.001838,
(JIS09-01:0.000460,KNS09-13:0.003716):0.001393,KNS09-01:0.005108):
0.000000):0.000000,(BOS11-02:0.014392,(YBS10-01:0.018610,
((BOS10-01:0.006509,(BOS10-02:0.003731,JIS10-01:0.007479):
0.000910):0.000000,(KNS10-04:0.002787,
(JIS11-07:0.013560,KNS10-07:0.003723):0.002399):0.003253):0.001258,
(YBS11-01:0.013437,BOS11-03:0.017137):0.002299,(BOS11-01:0.006992,
(JIS11-01:0.008423,(JIS11-02:0.003246,
(JIS11-08:0.009800,JIS11-05:0.007923):0.000468):0.002328):0.002323,
((KNS11-04:0.005603,KNS11-06:0.007505):0.003290,KNS11-07:0.016954):
0.000419,((BAS11-01:0.007008,KNS11-05:0.001850):
0.002328,JIS11-12:0.007949):0.001855,((JIS11-13:0.011961,
(KTS11-01:0.005286,(JIS11-10:0.003714,JIS11-03:0.004048):0.001829):
0.000000,KTS11-02:0.009501):0.000000):0.000925,(JIS11-06:0.007440,
(JIS11-04:0.004646,(PLS11-01:0.005591,
(JIS11-11:0.003253,JIS11-09:0.001388):0.002686,(KNS11-02:0.001752,
(KNS11-09:0.003251,KNS11-03:0.001390):0.001492):0.000000):0.001019):
0.002797):0.000000):0.000634):0.002620):0.000463):0.001860):
0.000467):0.004119):0.004399):0.002764):0.000342):0.006384):
0.000000):0.003710):0.000000):0.000950):0.006008):0.001390):
0.000461):0.001029):0.000000):0.000571):0.000442):0.004098):
0.002323):0.000471):0.000000):0.000473):0.000463):0.000442):
0.003735):
0.002315,NIE0210766.DQ890385:0.000001,Sabin2.AY184220:0.00000,BOS06-
02:0.002782,CHN3024.HN.CHN.
1999.260907738:0.002315,ANS07-01:0.004178,(NIS11-01:0.006510,
((((LAS05-01:0.004202,(SOS10-01:0.011304,SOS10-02:0.017077):
0.007525):0.000437,NIS07-01:0.004646):0.000000,BAS08-06:0.012631):
0.000463,((BOS06-01:0.006124,P2S.Mog664.30908785:0.013219):
0.000385,JIS06-04:0.007454):0.000000):0.000000):
0.000000,KBS06-01:0.005110,KDS09-08:0.006040,
((NIS09-01:0.007035,SOS09-01:0.003695):0.014127,
(SOS09-04:0.011331,KBS09-03:0.007005):0.001379):
0.000469,KBS08-03:0.008404):0.002805,
(EGY88-074.AF448782:0.010189,EGY93-034.AF448783:0.046065):
0.015838,KTS09-05:0.015963,((MAD007.115430548:0.000941,
(MAD004.115430546:0.000000,MAD005.164420616:0.000000):
0.000000,MAD006.164420618:0.000463):0.000911):
0.017624,NIE0110767.DQ890386:0.014753):
0.003098,KTS06-01:0.011675,JIS06-06:0.011686,MAD029.115430550:0.0083
83,BAS06-01:0.009791,((SOS08-05:0.002911,SOS08-08:0.005475):
0.021101,SOS07-02:0.015381):0.001149,
(ZAS09-05:0.004629,ZAS08-15:0.006570):0.020527,SOS07-01:0.004245):
0.000932):0.005989,SOS05-01:0.007447,((BOS07-02:0.015831,
(BOS06-03:0.002382,BOS08-01:0.022271):0.001477):0.000441,
(BOS07-01:0.007979,JIS07-02:0.008447):0.004185,BOS06-04:0.002779):
0.004187):0.002809,SOS08-09:0.019751,((((V2-Tsi.
2.MAD.HQ738293:0.000000,V2-Tsi.3.MAD.HQ738294:0.000925):0.001807,V2-

TSI.MAD.HQ738290:0.000972):0.001384,(V2-Tsi.
1.MAD.HQ738292:0.000000,V2-Tsi.4.MAD.HQ738295:0.000462):0.002375):
0.009516,((V2-TOL.c12.MAD.HQ738289:0.000463,V2-
TOL.c11.MAD.HQ738288:0.000463):0.003728,V2-
BEL.MAD.HQ738286:0.004189):0.003040):0.000000,(V2-Tol.
1.MAD.HQ738303:0.005615,V2-SAK.MAD.HQ738287:0.006065):0.005387):
0.003921,KBS11-01:0.005570,(BOS09-06:0.010392,BOS09-09:0.012734):
0.005085,((JIS06-03:0.006729,KNS06-01:0.005420):
0.008476,BAS05-01:0.002490):0.004956);