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<120> Novel avian Astrovirus

<130> 2008-003-PD

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<170> PatentIn version 3.5

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gaa gaa gaa tac cgt cgg tta gag gaa gaa ggc ttc tca aaa gat gag	96
Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu	
20 25 30	

att aaa gag atc gtg gac aat ctg cga gaa caa gcc tgg atc gat tac	144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr	
35 40 45	

cag aat cag cta gat gaa gaa ggt gat gat gac tgg tat gag caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	

act gaa gat caa aga att aat gat gag att gat aag caa att gag caa	240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln	
65 70 75 80	

gac ctt gaa gat cga gga gaa tgg tat ggc cag tct ggg aaa cct agg	288
Asp Leu Glu Asp Arg Gly Glu Trp Tyr Gly Gln Ser Gly Lys Pro Arg	
85 90 95	

agg ata acc ttt aaa cag aga gcg atg ctt cgc ttc att cag ctt ggt	336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
100 105 110	

cga caa caa caa ata gcc aca att tca ttt cct gat ggc tat gaa gat	384
Arg Gln Gln Gln Ile Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp	
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Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Glu Trp Tyr Gly Gln Ser Gly Lys Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
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Arg Ala Glu Glu Leu Tyr Asn
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 Leu Glu Leu Asp Trp Thr Arg Phe Asp Gly Thr Ile Pro Val Gln Leu
 20 25 30
 ttc caa aga atg cgt act atg cgt aaa ttc ttt cta act agg cgt tca 144
 Phe Gln Arg Met Arg Thr Met Arg Lys Phe Phe Leu Thr Arg Arg Ser
 35 40 45
 aga aag agg tat gga aaa cta ctt gac tgg tat aat gcc cag cta act 192
 Arg Lys Arg Tyr Gly Lys Leu Leu Asp Trp Tyr Asn Ala Gln Leu Thr
 50 55 60
 gat agg att act ctc tta cca aca gga gag gtg act cat gtc aag aag 240
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 <213> novel avian Astrovirus - Isolate 19

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 35 40 45
 Arg Lys Arg Tyr Gly Lys Leu Leu Asp Trp Tyr Asn Ala Gln Leu Thr
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Gly Asn Pro Ser Gly
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<210> 8
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<222> (41)..(41)
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Leu Gln Met Gln Asp Thr Thr Asp Arg Thr Thr His Thr Thr Cys Val
20 25 30

agt atc tac att gtt gtt gct tat cgc cag tcg cgg agg ctg ata gcc 143
Ser Ile Tyr Ile Val Val Ala Tyr Arg Gln Ser Arg Arg Leu Ile Ala
35 40 45

ttc ttt aac aat gca ggc cca gtc cgg gcg gcg ccc aca act atg ctt 191
Phe Phe Asn Asn Ala Gly Pro Val Arg Ala Ala Pro Thr Thr Met Leu
50 55 60

tgt cta tac aat gtg gat gcg ggc cgg gca cca gct aca cca tac aat 239
Cys Leu Tyr Asn Val Asp Ala Gly Arg Ala Pro Ala Thr Pro Tyr Asn
65 70 75

acc ttc caa ctc aca ctt caa agt gag ctt gct gac cca aat tct cca 287
Thr Phe Gln Leu Thr Leu Gln Ser Glu Leu Ala Asp Pro Asn Ser Pro
80 85 90 95

tct gat gat gaa gac gat gac atc tcg ctt gcg gga tca tgt ctt caa 335
Ser Asp Asp Glu Asp Asp Asp Ile Ser Leu Ala Gly Ser Cys Leu Gln
100 105 110

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 <223> The 'Xaa' at location 13 stands for Glu, or Asp.
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Gln Met Gln Asp Thr Thr Asp Arg Thr Thr His Thr Thr Cys Val Ser
 20 25 30

Ile Tyr Ile Val Val Ala Tyr Arg Gln Ser Arg Arg Leu Ile Ala Phe
 35 40 45

Phe Asn Asn Ala Gly Pro Val Arg Ala Ala Pro Thr Thr Met Leu Cys
 50 55 60

Leu Tyr Asn Val Asp Ala Gly Arg Ala Pro Ala Thr Pro Tyr Asn Thr
 65 70 75 80

Phe Gln Leu Thr Leu Gln Ser Glu Leu Ala Asp Pro Asn Ser Pro Ser
 85 90 95

Asp Asp Glu Asp Asp Asp Ile Ser Leu Ala Gly Ser Cys Leu Gln Asp
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Glu Phe Asp Cys Val Asp Gln Leu Glu Lys Glu Arg Glu Asp
 115 120 125

<210> 10
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 Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
 20 25 30
 atc aaa gag att gtg gac aat ctt cgt gag cag gcc tgg att gat tat 144
 Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
 35 40 45

cag aac caa ctt gat gaa gag ggt gat gat gac tgg tat gag caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	

act gaa gat caa agg atc aat gat gaa att gac aag caa att gag caa	240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln	
65 70 75 80	

gac ctt gaa gat cga gga gat tgg tat ggc cag tct gga caa cct agg	288
Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg	
85 90 95	

agg ata acc ttc aag caa agg gcg atg ctt cga ttc atc caa ctt ggt	336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
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1 5 10 15

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35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg	Gln	Gln	Gln	Thr	Ala	Thr	Ile	Ser	Phe	Pro	Asp	Gly	Tyr	Glu	Asp
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Arg	Ala	Glu	Glu	Leu	Phe	Asn
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20 25 30	
 atc aaa gag att gtg gac aat ctt cgt gag caa gct tgg att gac tat	144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr	
35 40 45	
 cag aac caa ctt gat gaa gag ggt gac gat gac tgg tat gag caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	
 act gaa gat caa agg att aat gac gaa att gac aag cag atc gag caa	240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln	
65 70 75 80	
 gat ctt gaa gac cga gga gat tgg tat ggc cag tct gga caa cct agg	288
Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg	
85 90 95	
 agg ata acc ttc aaa caa agg gcg atg ctt cgt ttc atc caa ctt ggt	336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
100 105 110	
 cgg caa caa caa aca gcc aca att tca ttt cct gat ggc tat gaa gat	384
Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp	
115 120 125	
 aga gct gag gag ctc ttt aac aa	407
Arg Ala Glu Glu Leu Phe Asn	
130 135	

<210> 13
 <211> 135
 <212> PRT
 <213> novel avian Astrovirus - Isolate 686

<400> 13

Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
115 120 125

Arg Ala Glu Glu Leu Phe Asn
130 135

<210> 14

<211> 407

<212> DNA

<213> novel avian Astrovirus - Isolate 714

<220>

<221> CDS

<222> (1)..(405)

<400> 14

act aaa tcg atc tca aaa gca gcc ttc atg aaa act aaa gtc ctc acc 48
Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

gaa gag gaa tat cgt cgg tta gag gag gaa ggc ttt tcc aaa gat gag 96
Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

atc aaa gag att gtg gac aat ctt cgt gag cag gct tgg att gac tat 144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

cag aac caa ctt gat gaa gag ggt gat gat gac tgg tat gaa caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	

act gag gat caa agg atc aat gat gaa att gat aag caa att gag caa	240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln	
65 70 75 80	

gac ctt gaa gat cga gga gac tgg tat ggt cag tcc ggt caa cct agg	288
Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg	
85 90 95	

agg ata acc ttc aag cag aga gct atg ctt cgc ttt atc caa ctt ggt	336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
100 105 110	

cgg caa caa caa aca gcc aca att tca ttt cct gat ggc tat gaa gat	384
Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp	
115 120 125	

aga gct gaa gag ctc tat aat aa	407
Arg Ala Glu Glu Leu Tyr Asn	
130 135	

<210> 15
 <211> 135
 <212> PRT
 <213> novel avian Astrovirus - Isolate 714

<400> 15

Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp

115

120

125

Arg Ala Glu Glu Leu Tyr Asn
130 135

<210> 16

<211> 407

<212> DNA

<213> novel avian Astrovirus - Isolate 715

<220>

<221> CDS

<222> (1)..(405)

<400> 16

act aaa tcg atc tca aaa gct gcc ttc atg aaa aca aaa gtc ctt acc 48
Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

gaa gaa gaa tac cgt cgg tta gag gaa gaa ggc ttc tca aaa gat gag 96
Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

att aaa gag atc gtg gac aat ctg cga gaa caa gcc tgg atc gat tac 144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

cag aat cag cta gat gaa gaa ggc gat gat gac tgg tat gag caa atg 192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

act gaa gat caa aga atc aat gat gag att gat aag caa att gag caa 240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

gac ctt gaa gat cga gga gaa tgg tat ggc cag tct ggg aaa tct agg 288
Asp Leu Glu Asp Arg Gly Glu Trp Tyr Gly Gln Ser Gly Lys Ser Arg
85 90 95

agg ata acc ttt aag cag aga gcg atg ctt cgg ttc att cag ctt ggt 336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

cga caa caa caa ata gcc aca att tca ttt cct gat ggc tat gaa gat 384
Arg Gln Gln Gln Ile Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
115 120 125

aga gct gaa gaa ctc tat aat aa 407
Arg Ala Glu Glu Leu Tyr Asn
130 135

<210> 17

<211> 135

<212> PRT

<213> novel avian Astrovirus - Isolate 715

<400> 17

Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Glu Trp Tyr Gly Gln Ser Gly Lys Ser Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg Gln Gln Gln Ile Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
115 120 125

Arg Ala Glu Glu Leu Tyr Asn
130 135

<210> 18

<211> 407

<212> DNA

<213> novel avian Astrovirus - Isolate 1736

<220>

<221> CDS

<222> (1)..(405)

<400> 18

acc aaa tcg atc tca aaa gca gcc ttc atg aaa act aaa gtt ctc acc 48
Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

gaa gaa gaa tat cgt cgg tta gag gag gaa ggc ttt tca aag gat gag 96
Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

atc aaa gag att gtg gac aat ctc cgt gaa caa gct tgg att gac tac 144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

cag aac caa ctt gat gaa gaa ggt gat gat gac tgg tat gaa caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	

act gaa gat caa agg atc aat gat gaa att gac aag cag att gaa caa	240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln	
65 70 75 80	

gat ctt gag gat cga gga gac tgg tat ggc cag tct ggt caa cct agg	288
Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg	
85 90 95	

agg ata acc ttt aag cag aga gcg atg ctt cgc ttc att caa ctt ggg	336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
100 105 110	

cga caa caa caa aca gct aca att tca ctt cct gat ggt tat gaa gat	384
Arg Gln Gln Gln Thr Ala Thr Ile Ser Leu Pro Asp Gly Tyr Glu Asp	
115 120 125	

aga gct gaa gaa ctt ttt aac aa	407
Arg Ala Glu Glu Leu Phe Asn	
130 135	

<210> 19
 <211> 135
 <212> PRT
 <213> novel avian Astrovirus - Isolate 1736

<400> 19

Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg	Gln	Gln	Gln	Thr	Ala	Thr	Ile	Ser	Leu	Pro	Asp	Gly	Tyr	Glu	Asp
	115						120					125			

Arg	Ala	Glu	Glu	Leu	Phe	Asn
130						135

<210> 20
 <211> 407
 <212> DNA
 <213> novel avian Astrovirus - Isolate 2383

<220>
 <221> CDS
 <222> (1)..(405)

<400> 20	
act aaa tcc atc tca aaa gca gcc ttc atg aaa act aaa gtt ctc acc	48
Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr	
1 5 10 15	
 gaa gaa gaa tat cgt cgg tta gag gag gaa ggc ttt tca aaa gat gag	96
Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu	
20 25 30	
 atc aaa gag att gtg gac aat ctc cgc gaa caa gcc tgg att gac tac	144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr	
35 40 45	
 cag aac caa ctt gat gaa gaa ggt gat gat gac tgg tat gaa caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	
 act gaa gac caa aga gtc aat gat gaa att gat aag caa att gag cgg	240
Thr Glu Asp Gln Arg Val Asn Asp Glu Ile Asp Lys Gln Ile Glu Arg	
65 70 75 80	
 gat ctt gaa gat cgt gga gag tgg tat ggt cag tct gga aaa ctt agg	288
Asp Leu Glu Asp Arg Gly Glu Trp Tyr Gly Gln Ser Gly Lys Leu Arg	
85 90 95	
 aga ata acc ttc aag gaa aga gcg atg ctt cgc ttt att cag ctt ggt	336
Arg Ile Thr Phe Lys Glu Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
100 105 110	
 cga cag caa cat acg gcc act atc tca ttc cca gat ggt tat gaa gat	384
Arg Gln Gln His Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp	
115 120 125	
 aga gct gaa gaa ctc ttt aat aa	407
Arg Ala Glu Glu Leu Phe Asn	
130 135	

<210> 21
 <211> 135
 <212> PRT
 <213> novel avian Astrovirus - Isolate 2383

<400> 21

Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Val Asn Asp Glu Ile Asp Lys Gln Ile Glu Arg
65 70 75 80

Asp Leu Glu Asp Arg Gly Glu Trp Tyr Gly Gln Ser Gly Lys Leu Arg
85 90 95

Arg Ile Thr Phe Lys Glu Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg Gln Gln His Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
115 120 125

Arg Ala Glu Glu Leu Phe Asn
130 135

<210> 22

<211> 413

<212> DNA

<213> novel avian Astrovirus - Isolate 2388

<220>

<221> CDS

<222> (1)..(411)

<400> 22

cat aaa act aaa tcg atc tct aag gct gcc ttc atg aaa aca aaa gtt 48
His Lys Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val
1 5 10 15

ctc acc gaa gaa gaa tat cgt cgg tta gag gag gaa ggc ttt tca aaa 96
Leu Thr Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys
20 25 30

gat gag atc aga gag att gtg gac aat ctc cgc gaa caa gct tgg att 144
Asp Glu Ile Arg Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile
35 40 45

gac tac cag aat cag ctt gat gaa gaa ggt gat gac gac tgg tat gag	192
Asp Tyr Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu	
50 55 60	

caa atg act gaa gat caa aga gtc aat gat gaa att gat agg caa att	240
Gln Met Thr Glu Asp Gln Arg Val Asn Asp Glu Ile Asp Arg Gln Ile	
65 70 75 80	

gag cag agt ctt gaa gat cgt ggc gac tgg tat ggc cag tct gga aag	288
Glu Gln Ser Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Lys	
85 90 95	

cct agg aga ata acc ttc aag gaa aga gcg atg ctt cgc ttc att caa	336
Pro Arg Arg Ile Thr Phe Lys Glu Arg Ala Met Leu Arg Phe Ile Gln	
100 105 110	

ctc ggg aga caa caa caa ata gcc aca att tca ttt ccc gat ggt tgt	384
Leu Gly Arg Gln Gln Gln Ile Ala Thr Ile Ser Phe Pro Asp Gly Cys	
115 120 125	

gaa gat aga gct gaa gaa atc ttt aac aa	413
Glu Asp Arg Ala Glu Glu Ile Phe Asn	
130 135	

<210> 23
 <211> 137
 <212> PRT
 <213> novel avian Astrovirus - Isolate 2388

<400> 23

His Lys Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val
1 5 10 15

Leu Thr Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys
20 25 30

Asp Glu Ile Arg Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile
35 40 45

Asp Tyr Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu
50 55 60

Gln Met Thr Glu Asp Gln Arg Val Asn Asp Glu Ile Asp Arg Gln Ile
65 70 75 80

Glu Gln Ser Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Lys
85 90 95

Pro Arg Arg Ile Thr Phe Lys Glu Arg Ala Met Leu Arg Phe Ile Gln
100 105 110

Leu Gly Arg Gln Gln Gln Ile Ala Thr Ile Ser Phe Pro Asp Gly Cys
 115 120 125

Glu Asp Arg Ala Glu Glu Ile Phe Asn
 130 135

<210> 24
 <211> 407
 <212> DNA
 <213> novel avian Astrovirus - Isolate 7279

<220>
 <221> CDS
 <222> (1)..(405)

<400> 24
 acc aaa gcg atc tcc aaa gct gcc ttc atg aaa act aaa gtt ctt acc 48
 Thr Lys Ala Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
 1 5 10 15
 gaa gaa gaa tat cgt cgg tta gag gag gaa ggc ttt tct aaa gat gag 96
 Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
 20 25 30
 atc aaa gag att gtg gac aat ctt cgc gag cag gcc tgg att gat tac 144
 Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
 35 40 45
 cag aac caa ctt gat gaa gag ggt gat gat gac tgg tat gaa caa atg 192
 Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
 50 55 60
 act gaa gat caa agg atc aat gat gaa att gac aaa caa att gaa caa 240
 Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
 65 70 75 80
 gat ctt gaa gat cga ggt gac tgg tat ggc cag tct ggt caa cct agg 288
 Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
 85 90 95
 agg ata act ttt aag cag agg gca atg ctt cgc ttc att cag ctc ggg 336
 Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
 100 105 110
 cga caa caa caa acg gcc aca att tca ttt cct gat ggt tat gaa gat 384
 Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
 115 120 125
 aga gct gaa gaa ctc ttc aac aa 407
 Arg Ala Glu Glu Leu Phe Asn
 130 135

<210> 25
 <211> 135
 <212> PRT
 <213> novel avian Astrovirus - Isolate 7279

<400> 25

Thr Lys Ala Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
115 120 125

Arg Ala Glu Glu Leu Phe Asn
130 135

<210> 26

<211> 407

<212> DNA

<213> novel avian Astrovirus - Isolate 161317

<220>

<221> CDS

<222> (1)..(405)

<400> 26

act aaa tcg atc tca aaa gca gcc ttc atg aaa act aaa gtc ctc acc 48
Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

gaa gaa gaa tat cgt cgg ttg gag gag gaa ggc ttt tct aaa gat gag 96
Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

atc aaa gag att gtg gac aat ctt cgt gag cag gcc tgg att gac tat 144
Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

cag aac caa ctt gac gaa gag ggt gac gat gat tgg tat gag caa atg	192
Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met	
50 55 60	

act gaa gat caa agg atc aat gat gaa att gac aag caa att gag caa	240
Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln	
65 70 75 80	

gac ctt gaa gat cga gga gat tgg tat ggc cag tct gga caa cct agg	288
Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg	
85 90 95	

agg ata acc ttc aag caa agg gcg atg ctt cga ttc atc caa ctt ggt	336
Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly	
100 105 110	

cga caa caa caa aca gcc aca att tca ttt cct gat ggc tat gaa gat	384
Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp	
115 120 125	

aga gct gag gaa ctc ttt aat aa	407
Arg Ala Glu Glu Leu Phe Asn	
130 135	

<210> 27
 <211> 135
 <212> PRT
 <213> novel avian Astrovirus - Isolate 161317

<400> 27

Thr Lys Ser Ile Ser Lys Ala Ala Phe Met Lys Thr Lys Val Leu Thr
1 5 10 15

Glu Glu Glu Tyr Arg Arg Leu Glu Glu Glu Gly Phe Ser Lys Asp Glu
20 25 30

Ile Lys Glu Ile Val Asp Asn Leu Arg Glu Gln Ala Trp Ile Asp Tyr
35 40 45

Gln Asn Gln Leu Asp Glu Glu Gly Asp Asp Asp Trp Tyr Glu Gln Met
50 55 60

Thr Glu Asp Gln Arg Ile Asn Asp Glu Ile Asp Lys Gln Ile Glu Gln
65 70 75 80

Asp Leu Glu Asp Arg Gly Asp Trp Tyr Gly Gln Ser Gly Gln Pro Arg
85 90 95

Arg Ile Thr Phe Lys Gln Arg Ala Met Leu Arg Phe Ile Gln Leu Gly
100 105 110

Arg Gln Gln Gln Thr Ala Thr Ile Ser Phe Pro Asp Gly Tyr Glu Asp
115 120 125

Arg Ala Glu Glu Leu Phe Asn
130 135

<210> 28
<211> 23
<212> DNA
<213> Artificial

<220>
<223> Sequencing primer F-II for ORF1a fwd

<400> 28
aaaggkaaga cdaagarrra cmg 23

<210> 29
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Sequencing primer R-II-3 for ORF1a rev

<400> 29
tcgccttctg gaaggtcttc a 21

<210> 30
<211> 22
<212> DNA
<213> Artificial

<220>
<223> PCR detection primer 29, fwd

<400> 30
gtyctyaccg argargarta yc 22

<210> 31
<211> 22
<212> DNA
<213> Artificial

<220>
<223> PCR detection primer 30, rev

<400> 31
aadgttatyc tcctargbtk hc 22

<210> 32
<211> 19
<212> DNA
<213> Artificial

<220>
 <223> Sequencing primer 20, ORF1b fwd

 <400> 32
 tgghcmccyt tyttygghg 19

 <210> 33
 <211> 24
 <212> DNA
 <213> Artificial

 <220>
 <223> Sequencing primer 21, ORF1b rev

 <400> 33
 rtttrtcmacd gtkgtdgarw aytg 24

 <210> 34
 <211> 22
 <212> DNA
 <213> Artificial

 <220>
 <223> Sequencing primer ORF2-R

 <400> 34
 ttagatctga aagcgccgga gg 22