**Table S1:** Pairwise comparison of nucleotide sequence identities of the complete (near complete, U460) genomes of the seven (7) astrovirus field strains (**bold**) and with sequences of other astroviruses available in GenBank

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Strain name | **U083** | **K321** | **U460** | **K456** | **K451** | **K366** | **K062** |
| **U083\_KY940077\_M.2** | 100 | 81.86 | 44.09 | 46.93 | 47.36 | 46.99 | 46.64 |
| **K321\_KY940076\_M.2** | 81.86 | 100 | 44.7 | 47.62 | 47.11 | 47.62 | 47.39 |
| PoAstV2\_JPN\_HgOg2-4\_2015-LC201587 | 74.33 | 76.33 | 44.39 | 47.71 | 47.09 | 47.57 | 47.3 |
| Astrovirus\_2\_KNU14-07 | 74.32 | 75.57 | 44.26 | 47.39 | 47.21 | 47.16 | 47.27 |
| PAstV2\_GER\_L00855-K14\_2014-LT898434 | 76.05 | 74.83 | 44.91 | 47.21 | 47.51 | 47.55 | 47.41 |
| Astrovirus\_2\_Bel-12R021 | 73.11 | 74.3 | 43.73 | 47.04 | 47.53 | 47.32 | 47.58 |
| PoAstV2\_JPN\_Ishi-Im3\_2015-LC201593 | 71.36 | 74.04 | 43.56 | 48.03 | 47.22 | 47.91 | 47.67 |
| AstV2-US-IA122 | 72.88 | 73.88 | 43.75 | 47.3 | 48 | 48.02 | 48.05 |
| Camel\_DcAstV-64 | 72.37 | 72.33 | 44.14 | 47.24 | 47.57 | 47.42 | 47.52 |
| PoAstV2\_Italy\_DIAPD5469-10-MG930777 | 72.26 | 72.08 | 43.48 | 46.29 | 46.34 | 46.95 | 46.83 |
| astrovirus\_DcAstV-135 | 71.87 | 72.08 | 43.89 | 47.26 | 47.77 | 47.28 | 47.21 |
| astrovirus\_2\_43\_USA | 71.29 | 72 | 44.2 | 47.35 | 47.7 | 48.01 | 48.37 |
| Astrv2\_ExpPig-36 | 71.19 | 72 | 44.00 | 47.67 | 48.19 | 48.29 | 48.19 |
| M.3\_AstV-LL-1-KP747573 | 71.47 | 71.56 | 44.05 | 47.09 | 47.4 | 47.15 | 46.92 |
| PoAstV2\_JPN\_HgYa2-3\_2015-LC201588 | 70.95 | 71.45 | 43.9 | 47.36 | 47.03 | 47.73 | 47.41 |
| Camel\_DcAstV-274 | 71.59 | 71.22 | 43.81 | 47.56 | 47.97 | 47.78 | 47.46 |
| PoAstV2\_BEL\_15V010-KY214438 | 69.56 | 70.49 | 43.52 | 46.83 | 47.39 | 46.97 | 46.4 |
| astrovirus\_B76-2\_HK | 66.11 | 66.39 | 44.04 | 45.95 | 46.33 | 46.11 | 46.32 |
| BAstV-GX27\_CHN\_2014 | 66.63 | 66.35 | 44.95 | 46.09 | 46.44 | 46.93 | 46.43 |
| **K456\_KY933398\_M.4** | 46.93 | 47.62 | 44.05 | 100 | 64.45 | 74.34 | 74.43 |
| **K451\_KY940075\_M.4** | 47.36 | 47.11 | 44.09 | 64.45 | 100 | 65.81 | 65.61 |
| **S17\_K366\_** **MT451917\_M.4** | 46.99 | 47.62 | 43.32 | 74.34 | 65.81 | 100 | 88.38 |
| **S18\_K062\_** **MT451918\_M.4** | 46.64 | 47.39 | 43.09 | 74.43 | 65.61 | 88.38 | 100 |
| Astrovirus\_4\_15-14 | 47.14 | 47.6 | 43.21 | 73.86 | 63.34 | 74.55 | 74.89 |
| AstV4-US-IL135 | 47.52 | 47.59 | 43.6 | 76.85 | 70.12 | 75.09 | 74.62 |
| wild\_boar\_WBAstV-1-2011\_HUN | 46.05 | 47.13 | 43.16 | 76.48 | 65.78 | 78.9 | 76.74 |
| WBAstV\_CH\_2015-KX033447 | 47.15 | 47.33 | 43.32 | 74.79 | 65.37 | 79.57 | 79.56 |
| PoAstV4\_JPN\_Bu5-10-2\_2014-LC201603 | 47.87 | 48.14 | 43.8 | 75.3 | 66.77 | 77.13 | 78.22 |
| PoAstV4\_CH\_JXZS\_2014-KX060809 | 47.31 | 47.17 | 43.32 | 77.46 | 64.65 | 75.19 | 75.69 |
| PoAstV4\_CH\_JXJA-KX060808 | 47.44 | 47.63 | 43.06 | 75.31 | 66.72 | 77.14 | 77.27 |
| Astrovirus\_4\_35\_USA | 47.98 | 48.04 | 43.51 | 74.39 | 69.96 | 75.74 | 75.63 |
| PoAstV4\_BEL\_15V010-KY214437 | 47.15 | 47.48 | 42.71 | 72.67 | 63.57 | 73.73 | 74.38 |
| PoAstV4\_JPN\_MoI2-1-1\_2015-LC201609 | 47.79 | 48.06 | 43.69 | 76.77 | 64.96 | 74.63 | 73.36 |
| PoAstV4\_Tianjin\_2018-MH425243 | 47.29 | 47.37 | 43.12 | 77.03 | 66 | 75.41 | 75.56 |
| PoAstV4\_JPN\_HgTa2-3\_2015-LC201608 | 47.38 | 47.72 | 43.48 | 72.22 | 65.34 | 73.27 | 73.77 |
| **U460\_KY933399\_M.3** | 44.09 | 44.7 | 100 | 44.05 | 44.09 | 43.32 | 43.09 |
| Astrovirus\_3\_US-MO123 | 42.72 | 42.97 | 65.00 | 42.61 | 42.28 | 42.81 | 42.66 |
| PoAstV3\_USA\_IA\_7023\_2017-KY940545 | 42.55 | 42.72 | 65.47 | 42.57 | 42.55 | 43.04 | 42.64 |
| PoAstV3\_JPN\_Bu2-5\_2014-LC201595 | 41.66 | 42.47 | 64.69 | 42.25 | 41.99 | 42.63 | 42.63 |
| PoAstV3\_JPN\_Bu8-4\_2014-LC201599 | 41.83 | 42.51 | 64.98 | 42.59 | 41.79 | 42.83 | 42.91 |
| PoAstV3\_NI-Brain\_173-2016a\_HUN-KY073231 | 41.86 | 42.41 | 65.00 | 42.34 | 42.41 | 43.2 | 43.23 |
| PoAstv3\_NI-Brain\_9-2016a\_HUN-KY073229 | 41.95 | 42.38 | 65.05 | 42.46 | 42.32 | 43.18 | 43.16 |
| PAstV3\_GER\_L00919-K17\_2014-KY073229 | 42.13 | 42.68 | 65.13 | 42.61 | 42.44 | 43.33 | 43.21 |
| VA4\_hu\_Nepal\_S5363\_2008 | 41.53 | 42.07 | 56.73 | 43.01 | 41.66 | 43.12 | 43.14 |
| Hu\_astrovirus\_BF34 | 41.97 | 42.41 | 57.31 | 42.42 | 42.06 | 42.22 | 42.2 |
| Hu\_VA1\_FJ973620 | 41.97 | 42.55 | 55.55 | 42.52 | 41.91 | 42.89 | 42.61 |

**Table S2.** Summary of nucleotide sequence identity matrix of the capsid protein (ORF2) among the seven (7) astroviruses field strains (**bold**) and the known reference strains in the GenBank using Clustal Omega

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Strain name** | **U083** | **K321** | **U460** | **K456** | **K451** | **K366** | **K062** |
| **U083\_KY940077\_M.2** | 100 | 61.48 | 36.34 | 41.33 | 42.27 | 41.2 | 40.66 |
| **K321\_KY940076\_M.2** | 61.48 | 100 | 34.93 | 42.51 | 40.28 | 42.78 | 42.77 |
| 2\_astrovirus\_2\_KNU14-07 | 58.28 | 61.29 | 36.21 | 42.35 | 40.63 | 41.06 | 42.15 |
| 2\_astrovirus\_2\_Bel-12R021 | 57.45 | 61.22 | 36.79 | 41.19 | 39.76 | 40.93 | 42.23 |
| 2\_AstV2-US-IA122 | 62.76 | 64.82 | 36.74 | 40.52 | 42.37 | 42.35 | 42.34 |
| 2\_astrovirus\_2\_43/USA | 62.06 | 64.64 | 36.82 | 40.2 | 41.8 | 41.64 | 42.22 |
| M.3/AstV-LL-1-KP747573 | 58.92 | 61.76 | 36.96 | 41.82 | 40.96 | 41.67 | 42.12 |
| PoAstV2/JPN/HgOg2-4/2015-LC201587 | 57.77 | 62.72 | 36.94 | 41.33 | 40.9 | 41.31 | 41.01 |
| PoAstV2/JPN/Ishi-Im3/2015-LC201593 | 57.7 | 65.01 | 35.73 | 41.73 | 40.2 | 42.6 | 41.9 |
| PoAstV2/BEL/15V010-KY214438 | 54.43 | 55.17 | 35.16 | 39.89 | 40.26 | 40.24 | 39.61 |
| PAstV2/GER/L00855-K14/2014-LT898434 | 68.23 | 62.62 | 37.34 | 40.89 | 41.74 | 41.45 | 42.11 |
| PoAstV2/Italy/DIAPD5469-10-MG930777 | 60.6 | 58.09 | 36.1 | 40.36 | 39.89 | 40.93 | 41.46 |
| PoAstV2/JPN/HgYa2-3/2015-LC201588 | 57.9 | 60.44 | 37.62 | 42.74 | 41.15 | 42.48 | 42.64 |
| 2\_Astrv2\_ExpPig-36 | 62.62 | 64.86 | 36.66 | 40.26 | 42.04 | 42.02 | 41.69 |
| 2\_Camel\_DcAstV-64 | 63.25 | 63.08 | 36.35 | 42.03 | 42.17 | 41.84 | 42.46 |
| 2\_astrovirus\_DcAstV-135 | 63.03 | 62.6 | 36.78 | 42.37 | 41.64 | 41.75 | 42.32 |
| 2\_astrovirus\_B76-2/HK | 60.32 | 60.38 | 35.81 | 40.19 | 39.86 | 40.65 | 40.51 |
| 2\_BAstV-GX27/CHN/2014 | 62.59 | 61.73 | 35.69 | 40.96 | 40.89 | 42.1 | 41.42 |
| 2-Camel\_DcAstV-274 | 62.45 | 61.09 | 35.43 | 42.38 | 42.06 | 42.58 | 42 |
| **K456\_KY933398\_M.4** | 41.33 | 42.51 | 36.28 | 100 | 59.64 | 59.04 | 58.86 |
| **K451\_KY940075\_M.4** | 42.27 | 40.28 | 35.56 | 59.64 | 100 | 64.05 | 63.38 |
| **K366\_** **MT451917\_M.4** | 41.2 | 42.78 | 33.79 | 59.04 | 64.05 | 100 | 74.92 |
| **K062\_** **MT451918\_M.4** | 40.66 | 42.77 | 35.51 | 58.86 | 63.38 | 74.92 | 100 |
| 4\_astrovirus\_4\_15-14 | 40.33 | 41.06 | 34.28 | 57.73 | 57.86 | 61.36 | 60.67 |
| 4\_AstV4-US-IL135 | 41.69 | 41.51 | 35.82 | 61.88 | 75.44 | 62.26 | 60.45 |
| 4\_wild\_boar\_WBAstV-1-2011\_HUN | 40.53 | 42.54 | 35.1 | 61.22 | 65.67 | 77.81 | 72.37 |
| WBAstV/CH/2015-KX033447 | 40.93 | 42.07 | 36.45 | 61.52 | 61.88 | 69.91 | 68.68 |
| PoAstV4/JPN/Bu5-10-2/2014-LC201603 | 41.15 | 42.92 | 34.74 | 60.34 | 65.92 | 65.06 | 66.65 |
| PoAstV4/CH/JXZS/2014-KX060809 | 41.87 | 41.5 | 35.09 | 69.43 | 60.64 | 59.08 | 59.28 |
| PoAstV4/CH/JXJA-KX060808 | 41.01 | 41.48 | 35.12 | 60.9 | 66.08 | 64.43 | 63.71 |
| 4\_astrovirus\_4\_35\_USA | 41.96 | 41.46 | 35.46 | 60.98 | 75.16 | 61.57 | 59.77 |
| P.\_astrovirus\_4/BEL/15V010-KY214437 | 41.43 | 41.56 | 35.57 | 59.94 | 58.04 | 61.07 | 61.01 |
| PoAstV4/JPN/MoI2-1-1/2015-LC201609 | 42.03 | 42.9 | 35.33 | 72.62 | 60.57 | 59.5 | 57.98 |
| PoAstV4/Tianjin/2018-MH425243 | 41.64 | 42.34 | 36.27 | 58.83 | 61.62 | 63.99 | 64.51 |
| PoAstV4/JPN/HgTa2-3/2015-LC201608 | 41.95 | 42.12 | 36.68 | 60.31 | 61.66 | 62.06 | 62.18 |
| **U460\_KY933399\_M.3** | 36.34 | 34.93 | 100 | 36.28 | 35.56 | 33.79 | 35.51 |
| 3\_astrovirus\_3\_US-MO123 | 33.89 | 36.55 | 59.34 | 35.51 | 37.03 | 35.58 | 36.94 |
| PoAstV3/USA/IA/7023/2017-KY940545 | 33.72 | 36.14 | 59.15 | 35.36 | 37.37 | 35.56 | 36.61 |
| PoAstV3/JPN/Bu2-5/2014-LC201595 | 34.05 | 36.56 | 58.96 | 34.87 | 36.71 | 34.79 | 36.14 |
| PoAstV3/JPN/Bu8-4/2014-LC201599 | 33.52 | 35.78 | 59.11 | 35.2 | 36.14 | 35.12 | 35.69 |
| PoAstV3/NI-Brain/173-2016a/HUN-KY073231 | 33.37 | 35.29 | 59.24 | 35.45 | 37.38 | 34.81 | 35.37 |
| PoAstv3/NI-Brain/9-2016a/HUN-KY073229 | 33.52 | 35.29 | 59.19 | 35.54 | 37.01 | 34.81 | 35.28 |
| PAstV3\_GER\_L00919-K17\_2014-KY073229 | 34.33 | 36.35 | 59.71 | 35.14 | 36.65 | 36.09 | 37.11 |
| 3\_VA4\_hu\_Nepal\_S5363\_2008 | 36.77 | 37.11 | 51.71 | 36.68 | 36.5 | 36.17 | 37.52 |
| 3\_Hu\_astrovirus\_BF34 | 36.99 | 37.29 | 52.66 | 36.19 | 36.33 | 34.99 | 35.42 |

**Table S3.** Summary of amino acid sequence identity matrix of the capsid protein (ORF2) among the 7 astroviruses field strains (**bold**) and the known reference strains in the GenBank using Clustal Omega

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Strain name** | **U083** | **K321** | **U460** | **K456** | **K451** | **K366** | **K062** |
| **U083\_KY940077\_M.2** | 100 | 58.45 | 21.4 | 31.38 | 29.96 | 28.44 | 30.01 |
| **K321\_KY940076\_M.2** | 58.45 | 100 | 22.52 | 31.38 | 28.7 | 30.79 | 31.82 |
| P.Astrv2\_KNU1407 | 54.99 | 58.96 | 22.12 | 29.91 | 31.26 | 31.02 | 31.66 |
| P.AstrV2\_PFTS-2 | 59.95 | 65.55 | 22.24 | 31.6 | 30.96 | 31.23 | 32.47 |
| AstV2USIA122 | 60.35 | 65.68 | 22.08 | 31.74 | 30.82 | 30.82 | 31.79 |
| PoAstV2/JPN/HgOg2-4/2015 | 56.08 | 63.78 | 22.55 | 30.36 | 30.23 | 31.41 | 31.11 |
| D.AstrV\_DcAstV-135 | 60.26 | 60.32 | 22.71 | 32.44 | 29.84 | 29.38 | 30.29 |
| P.AstrV2\_GXBS5/2013 | 59.39 | 64.85 | 20.34 | 30.11 | 29.3 | 29.4 | 29.92 |
| B.AstrV\_BAstGX-J8 | 59.22 | 60.89 | 22.26 | 31.02 | 29.23 | 30.38 | 31.02 |
| P.Astrv2\_ExpPig36 | 60.3 | 65.73 | 22.43 | 32.1 | 31.32 | 30.22 | 32.28 |
| Camel\_DcAstV64 | 59.6 | 59.65 | 21.46 | 32.31 | 29.57 | 29.78 | 30.97 |
| P.AstrV2\_51/USA | 61.16 | 63.32 | 22.02 | 32.75 | 30.24 | 31.36 | 31.99 |
| A.swine/PoAstV12-4/Canada/2006 | 59.45 | 76.4 | 22.46 | 31.49 | 29.48 | 31.31 | 30.87 |
| B.Astrv\_B762/HK | 53.94 | 56.24 | 21.58 | 30.25 | 28.38 | 29.88 | 30.71 |
| **U460\_KY933399\_M.3** | 21.4 | 22.52 | 100 | 22.59 | 22.53 | 22.49 | 23.03 |
| P.Astrv3\_USMO123 | 21.17 | 20.9 | 59.32 | 22.35 | 21.23 | 20.88 | 21.31 |
| PoAstV162/Canada/2006 | 20.87 | 20.9 | 59.04 | 22.21 | 20.79 | 20.88 | 21.46 |
| H.Astrovirus\_BF34 | 21.08 | 21.24 | 48.9 | 23.03 | 23.68 | 23.02 | 23.9 |
| VA4/human/Nepal/S5363/2008 | 21.02 | 22.24 | 48.75 | 21.88 | 21.35 | 22.04 | 22.63 |
| **K456\_KY933398\_M.4** | 31.38 | 31.38 | 22.59 | 100 | 54.21 | 55.71 | 54.21 |
| **K451\_KY940075\_M.4** | 29.96 | 28.7 | 22.53 | 54.21 | 100 | 60.57 | 59.61 |
| **K366\_** **MT451917\_M.4** | 28.44 | 30.79 | 22.49 | 55.71 | 60.57 | 100 | 73.29 |
| **K062\_** **MT451918\_M.4** | 30.01 | 31.82 | 23.03 | 54.21 | 59.61 | 73.29 | 100 |
| PoAstV4/JPN/Ishi-Ya7-1/2015 | 31.28 | 31.14 | 21.52 | 65.38 | 54.78 | 53.45 | 52.33 |
| PoAst4/US-P2011-1 | 32 | 30.12 | 20.69 | 64.27 | 56.5 | 54.72 | 53.48 |
| PoAst4/JXJA/CHINA | 29.6 | 30.08 | 22.49 | 55.54 | 63.41 | 61.04 | 60.37 |
| PoAst4/USA/15-12 | 30.4 | 29.85 | 21.67 | 51.95 | 53.32 | 57.16 | 56.72 |
| WBAstV/CH/2015 | 27.81 | 29.49 | 21.48 | 56.55 | 58.43 | 66.22 | 66.46 |
| PoAstrv4\_35/USA | 30.84 | 29.18 | 23.07 | 53.69 | 73.93 | 55.17 | 53.56 |

**Table S4:** Estimates of evolutionary divergence between the East African PoAstVs and selected known AstV in the GenBank based on the amino acid sequences of complete ORF2 protein. The number of amino acid differences per site from between sequences is shown. Standard error estimate(s) are shown above the diagonal for our strains.

| **Strain name** | **K456** | **K451** | **K0366** | **K062** | **U083** | **K321** | **U460** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **K456\_KY933398\_M.4** |  | 0.032 | 0.031 | 0.032 | 0.053 | 0.051 | 0.071 |
| **K451\_KY940075\_M.4** | 0.624 |  | 0.029 | 0.028 | 0.055 | 0.055 | 0.075 |
| **K366\_** **MT451917\_M.4** | 0.585 | 0.509 |  | 0.022 | 0.056 | 0.057 | 0.071 |
| **K062\_** **MT451918\_M.4** | 0.620 | 0.522 | 0.309 |  | 0.055 | 0.055 | 0.070 |
| **U083\_KY940077\_M.2** | 1.165 | 1.234 | 1.255 | 1.210 |  | 0.029 | 0.071 |
| **K321\_KY940076\_M.2** | 1.172 | 1.276 | 1.226 | 1.178 | 0.512 |  | 0.070 |
| **U460\_KY933399\_M.3** | 1.534 | 1.510 | 1.553 | 1.532 | 1.538 | 1.550 |  |
| P.Astrv2\_KNU1407 | 1.226 | 1.191 | 1.198 | 1.189 | 0.571 | 0.516 | 1.535 |
| P.AstrV2\_PFTS-2 | 1.182 | 1.182 | 1.191 | 1.152 | 0.484 | 0.419 | 1.536 |
| AstV2USIA122 | 1.170 | 1.183 | 1.188 | 1.154 | 0.475 | 0.429 | 1.547 |
| PoAstV2/JPN/HgOg2-4/2015 | 1.231 | 1.228 | 1.183 | 1.202 | 0.568 | 0.446 | 1.499 |
| D.AstrV\_DcAstV-135 | 1.168 | 1.224 | 1.229 | 1.198 | 0.473 | 0.488 | 1.481 |
| P.AstrV2\_GXBS5/2013 | 1.223 | 1.266 | 1.258 | 1.225 | 0.516 | 0.425 | 1.596 |
| B.AstrV\_BAstGX-J8 | 1.178 | 1.237 | 1.202 | 1.185 | 0.487 | 0.487 | 1.553 |
| P.Astrv2\_ExpPig36 | 1.179 | 1.175 | 1.211 | 1.154 | 0.475 | 0.418 | 1.534 |
| Camel\_DcAstV64 | 1.164 | 1.233 | 1.224 | 1.185 | 0.491 | 0.504 | 1.501 |
| P.AstrV2\_51/USA | 1.127 | 1.214 | 1.182 | 1.167 | 0.480 | 0.455 | 1.543 |
| A.swine/PoAstV12-4/Canada/2006 | 1.188 | 1.252 | 1.207 | 1.222 | 0.502 | 0.261 | 1.517 |
| B.Astrv\_B762/HK | 1.237 | 1.289 | 1.238 | 1.221 | 0.579 | 0.556 | 1.527 |
| P.Astrv3\_USMO123 | 1.565 | 1.604 | 1.642 | 1.604 | 1.589 | 1.630 | 0.499 |
| PoAstV162/Canada/2006 | 1.586 | 1.611 | 1.649 | 1.604 | 1.604 | 1.645 | 0.503 |
| H.Astrovirus\_BF34 | 1.536 | 1.517 | 1.482 | 1.437 | 1.627 | 1.577 | 0.711 |
| VA4/human/Nepal/S5363/2008 | 1.599 | 1.601 | 1.591 | 1.554 | 1.630 | 1.524 | 0.730 |
| wild\_boar/WBAstV1/2011/HUN | 0.562 | 0.479 | 0.243 | 0.361 | 1.243 | 1.222 | 1.579 |
| PoAstV4/JPN/MoI2-1-1/2015 | 0.330 | 0.595 | 0.612 | 0.645 | 1.156 | 1.180 | 1.604 |
| PoAstV4/CH/JXZS/2014 | 0.391 | 0.557 | 0.584 | 0.589 | 1.163 | 1.183 | 1.578 |
| PoAstV4/JPN/Ishi-Ya7-1/2015 | 0.429 | 0.626 | 0.633 | 0.661 | 1.165 | 1.202 | 1.578 |
| PoAst4/US-P2011-1 | 0.443 | 0.591 | 0.606 | 0.630 | 1.165 | 1.216 | 1.620 |
| PoAst4/JXJA/CHINA | 0.583 | 0.446 | 0.493 | 0.501 | 1.214 | 1.232 | 1.536 |
| PoAst4/USA/15-12 | 0.662 | 0.643 | 0.559 | 0.565 | 1.222 | 1.257 | 1.557 |
| WBAstV/CH/2015 | 0.567 | 0.544 | 0.405 | 0.403 | 1.268 | 1.244 | 1.589 |
| PoAstrv4\_35/USA | 0.620 | 0.291 | 0.589 | 0.619 | 1.198 | 1.247 | 1.494 |

**Table S5.** Recommended potential linear antigenic epitopes predicted inside capsid protein (ORF2) of our field strains by SVMTriP web-based tool and corresponding antigenicity predicted by VaxiJen software

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Genotype | Name | Rank | Location | Epitope | Score | Recommended by SVMTriP tool | Overall Prediction for the Protective Antigen (VaxiJen) | Probability of being antigen (VaxiJen) |
| PoAstV 4 | K456-S1 | 1 | 127 - 146 | **\***WRVQYLDIKLTPLVGASAVS | 1.000 |  | 1.6170 | Antigen |
| 2 | 662 - 681 | VTLSMVHQLVQQALAERNNQ | 0.619 |  | 0.6085 | Antigen |
| 3 | 67 - 86 | KSSNSMYSQRITATLGSVGA | 0.591 |  | 0.8726 | Antigen |
| 4 | 765 - 784 | IKNLLTPEAKDLYGDLRRKG | 0.569 |  | 0.4459 | Antigen |
| K451-S7 | 1 | 561 - 580 | SPTTLPSFIETIKITDTISV | 1.000 |  | 0.5850 | Antigen |
| 2 | 128 - 147 | \*RVDNILIKLTPLVGASAVSG | 0.994 |  | 0.7819 | Antigen |
| 3 | 509 - 528 | MVYAASHTAIGSNPTLHWTT | 0.936 |  | 0.5821 | Antigen |
| K366-S17 | 1 | 651 - 670 | APTALTTREILALREMMNGQ | 1.000 |  | 0.6738 | Antigen |
| 2 | 514 - 533 | YARIDNGPLHWTTCLWRATV | 0.992 |  | 0.4613 | Antigen |
| 3 | 128 - 147 | \*RVKNMIIKLTPLVGGSAVSG | 0.836 |  | 0.6293 | Antigen |
| K062-S18 | 1 | 651 - 670 | APTALTTREILALREMMNGQ | 1.000 |  | 0.6738 | Antigen |
| 2 | 514 - 533 | YARIDNGPLHWTTCLWRATV | 0.992 |  | 0.4613 | Antigen |
| 3 | 128 - 147 | \*RVKNMIIKLTPLVGGSAVSG | 0.836 |  | 0.6293 | Antigen |
| PoAstV2 | U083-S5 | 1 | 127 - 146 | \*KMTKCELVLKPLVGDSAVSG | 1.000 |  | 0.1348 | Non-Antigen |
|  | 2 | 743 - 762 | SDEYTEFTEVYHDALADGLS | 0.962 |  | 0.0943 | Non-Antigen |
|  | 3 | 267 - 286 | ARLKTDENGKMQLVLPTSSS | 0.713 |  | 0.0592 | Non-Antigen |
|  | 4 | 87 - 106 | GSEQIECEMTCLLNPATMKE | 0.687 |  | 0.7600 | Antigen |
|  | 5 | 591 - 610 | IIASRGTEAVVRGDHYFTPS | 0.684 |  | 0.6845 | Antigen |
|  | 6 | 703 - 722 | YSDPPISRLVVRDDAVALYE | 0.650 |  | 0.2461 | Non-Antigen |
|  | 7 | 657 - 676 | FGFDDASEFPPPPSEEDPAE | 0.608 |  | 0.5654 | Antigen |
| K321-S13 | 1 | 454 - 473 | VGFVCNGTKVCSFTVHKVEV | 1.000 |  | 0.6249 | Antigen |
|  | 2 | 93 - 112 | SGEIECELTCLMNPATMKEV | 0.850 |  | 0.8868 | Antigen |
|  | 3 | 130 - 149 | **\***LYKMTRCVVTLKPIVGDSAV | 0.777 |  | -0.0338 | Non-Antigen |
|  | 4 | 286 - 305 | LPRNSRMARAATTTPSEIIW | 0.612 |  | 0.2482 | Non-Antigen |
|  | 5 | 496 - 515 | NTTANLGNAVASAYVKANES | 0.527 |  | 0.5669 | Antigen |
|  | 6 | 63 - 82 | RRRVLRRQGVGDRVVFQKIN | 0.514 |  | -0.4204 | Non-Antigen |
| PoAstV3 | U460-S9 | 1 | 578 - 597 | TSQAPTTINADKIAIPKMAT | 1.000 |  | -0.2183 | Non-Antigen |
|  | 2 | 345 - 364 | KKALGRSMNSDEVYYVYASL | 0.967 |  | 0.1499 | Non-Antigen |
|  | 3 | 306 - 325 | NATTVGETIWQIVDEGANLV | 0.822 |  | 0.5468 | Antigen |
|  | 4 | 680 - 699 | RQTSDHVDAVIQEIQRRFRL | 0.804 |  | 0.5556 | Antigen |

\* The epitopes common to all genotypes except PoAstV3.

Analysis carried out with web based Support Vector Machine software which combines the Tri-peptide similarity and Propensity scores ([SVMTriP](http://sysbio.unl.edu/services/SVMTriP/prediction.php)) in order to achieve the better prediction performance (Yao et al. 2012). While antigenicity of predicted epitopes was determined using VaxiJen v2.0 protective antigen, tumour antigens and subunit vaccines prediction server (Doytchinova and Flower, 2007).