Supplementary Materials

**Supplementary Table 1. Summary of BLAST queries to reference homologs for proteins identified in Malagasy fruit bat *Nobecoviruses.***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Virus** | **Nucleotide or amino acid** | **β-HKU9**  **(MG762674)** | | **β--GCCDC1**  **(NC\_030886)** | | **β-BtRt-BetaCoV/GX2018**  **(MK492263)** | | **β-Eidolon\_helvum/Cameroon/2013**  **(NC\_048212)** | |
|  |  | **% identity/query cover** | **Protein accession #** | **% identity/query cover** | **Protein accession #** | **% identity/query cover** | **Protein accession #** | **% identity/query cover** | **Protein accession #** |
| P\_rufus\_AMB130 | Genome\* | 73.15/26\* | MG762674 | 72.87/22\* | NC\_030886 | 73.35/26\* | MK492263 | 73.54/26\* | NC\_048212 |
|  | ORF1a | 47.67/99 | AVP25405 | 53.7/98 | YP\_009273004 | 54.52/98 | QEH60462 | 48.35/99 | YP\_009824989 |
|  | ORF1b | 75.08/99 | AVP25405 | 75.2/99 | YP\_009273004 | 72.72/99 | QEH60462 | 76.10/98 | YP\_009824989 |
|  | S | 45.59/99 | AVP25406 | 47.3/99 | YP\_009273005 | 46.93/99 | QEH60463 | 46.47/99 | YP\_009824990 |
|  | NS3 | 40.38/72 | AVP25407 | 41.18/71 | YP\_009273006 | 39.63/76 | QEH60464 | 41.67/73 | YP\_009824991 |
|  | E | 50.68/92 | AVP25408 | 47.95/92 | YP\_009273007 | 49.32/92 | QEH60465 | 46.58/92 | YP\_009944266 |
|  | M | 58.56/99 | AVP25409 | 59.73/99 | YP\_009273008 | 60.63/99 | QEH60466 | 62.44/99 | YP\_009824992 |
|  | N | 50/89 | AVP25410 | 50.61/89 | YP\_009273009 | 50.6/89 | QEH60467 | 48.27/89 | YP\_009824993 |
|  | NS7a | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NS7b | 40.28/98 | AVP25412 | --- | --- | 43.26/96 | QEH60470 | 40/99 | YP\_009824995 |
| R\_madagascariensis\_MIZ178 | Genome\* | 77/32\* | MG762674 | 75.08/27\* | NC\_030886 | 75.95/34\* | MK492263 | 95.15/89\* | NC\_048212 |
|  | ORF1a | 60.59/99 | AVP25405 | 59.36/99 | YP\_009273004 | 60.22/99 | QEH60462 | 96.03/99 | YP\_009824989 |
|  | ORF1b | 82.02/99 | AVP25405 | 81.09/99 | YP\_009273004 | 82.36/99 | QEH60462 | 99.02/99 | YP\_009824989 |
|  | S | 49.84/99 | AVP25406 | 50.86/98 | YP\_009273005 | 50.62/99 | QEH60463 | 66.61/99 | YP\_009824990 |
|  | NS3 | 46.93/75 | AVP25407 | 44.44/72 | YP\_009273006 | 45.56/72 | QEH60464 | 89.32/99 | YP\_009824991 |
|  | E | 58.11/97 | AVP25408 | 55.41/97 | YP\_009273007 | 66.22/97 | QEH60465 | 92/98 | YP\_009944266 |
|  | M | 70.70/99 | AVP25409 | 70.75/99 | YP\_009273008 | 70.75/99 | QEH60466 | 91.98/99 | YP\_009824992 |
|  | N | 61.19/98 | AVP25410 | 59.25/96 | YP\_009273009 | 62.80/98 | QEH60467 | 86.6/99 | YP\_009824993 |
|  | NS7a | 55.65/76 | AVP25411 | 25.89/57 | YP\_009273011 | 54.78/76 | QEH60469 | --- | --- |
|  | NS7b | 80/95 | AVP25411 | --- | --- | 77.14/95 | QEH60469 | --- | --- |
|  | NS7c | 46.1/96 | AVP25412 | 28.57/82 | YP\_009273013 | 47.14/95 | QEH60470 | 45.89/99 | YP\_009824995 |
| R\_madagascariensis\_MIZ240 | Genome\* | 77.06/32 | MG762674 | 75.25/30 | NC\_030886 | 75.99/33 | MK492263 | 95.31/89 | NC\_048212 |
|  | ORF1a | 60.54/99 | AVP25405 | 59.41/99 | YP\_009273004 | 60.09/99 | QEH60462 | 96.15/99 | YP\_009824989 |
|  | ORF1b | 81.91/99 | AVP25405 | 81.12/99 | YP\_009273004 | 82.13/99 | QEH60462 | 99.13/99 | YP\_009824989 |
|  | S | 51.05/99 | AVP25406 | 50.6/96 | YP\_009273005 | 50.31/99 | QEH60463 | 66.61/99 | YP\_009824990 |
|  | NS3 | 45.81/75 | AVP25407 | 44.44/72 | YP\_009273006 | 44.97/72 | QEH60464 | 89.74/99 | YP\_009824991 |
|  | E | 58.11/97 | AVP25408 | 55.41/97 | YP\_009273007 | 66.22/97 | QEH60465 | 92/98 | YP\_009944266 |
|  | M | 71.43/97 | AVP25409 | 71.23/99 | YP\_009273008 | 71.23/99 | QEH60466 | 91.98/99 | YP\_009824992 |
|  | N | 61.62/98 | AVP25410 | 61.73/86 | YP\_009273009 | 67.48/87 | QEH60467 | 87.23/99 | YP\_009824993 |
|  | NS7a | 53.28/96 | AVP25411 | --- | --- | 52.76/88 | QEH60469 | --- | --- |
|  | NS7b | 66.67/92 | AVP25411 | --- | --- | 66.67/92 | QEH60469 | 42.86/35 | YP\_009824995 |
|  | NS7c | 46.81/96 | AVP25412 | 28.57/82 | YP\_009273013 | 47.86/95 | QEH60470 | 45.89/99 | YP\_009824995 |

\*BLASTn query indicated by superscript. All other queries were BLASTx.

---BLASTx query generated no hits.

NOTE: ORF1b was BLASTx queried as the segment of ORF1ab that did not overlap ORF1a.

**Supplementary Table 2. Summary of BLAST queries to reference homologs for proteins identified in Malagasy fruit bat *Nobecoviruses.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Virus** | **Nucleotide or amino acid** | **Top BLAST hit** | **% identity of top BLAST hit** | **% coverage of top BLAST hit** | **Accession number of top BLAST hit** |
| P\_rufus\_AMB130 | Genome\* | Bat coronavirus HKU9, complete genome | 73.64 | 27 | EF065514 |
|  | ORF1a | ORF1a [Bat coronavirus] | 48.36 | 99 | AWV67046 |
|  | ORF1b | ORF1ab polyprotein [Bat coronavirus] | 76.1 | 98 | YP\_009824989 |
|  | S | spike glycoprotein [Bat coronavirus] | 46.93 | 99 | QEH60463 |
|  | NS3 | hypothetical protein [Bat coronavirus HKU9] | 42.07 | 76 | ADM33567 |
|  | E | envelope protein [Eidolon bat coronavirus/Kenya/KY24/2006 | 46.58 | 92 | ADX59468 |
|  | M | Membrane glycoprotein [Bat coronavirus HKU9] | 63.13 | 97 | ABN10930 |
|  | N | N protein [Rousettus bat coronavirus HKU9] | 52.25 | 88 | AVP25400 |
|  | NS7a | Low-density lipoprotein receptor-related protein 1-like [Rhinipicephalus sanguineus]  CMRF35-like molecule 1 viral protein [Murine norovirus GV/CR10/2005/USA]† | 31.25 | 40 | XP\_037511191  5OR7† |
|  | NS7b | NS7b [Rousettus bat coronavirus HKU9] | 40.28 | 98 | AVP25412 |
| R\_madagascariensis\_MIZ178 | Genome\* | Bat coronavirus isolate CMR900 | 95.24 | 94 | MG693169 |
|  | ORF1a | ORF1a [Bat coronavirus] | 96.41 | 99 | AWV67062 |
|  | ORF1b | ORF1ab polyprotein [Bat coronavirus] | 99.02 | 99 | YP\_009824989 |
|  | S | Spike protein [Bat coronavirus] | 76.75 | 99 | AWV67064 |
|  | NS3 | ORF3 protein [Eidolon bat coronavirus Kenya/KY24/2006] | 94.54 | 99 | ADX59467 |
|  | E | envelope protein [Eidolon bat coronavirus/Kenya/KY24/2006] | 94.67 | 98 | ADX59468 |
|  | M | membrane protein [Bat coronavirus] | 91.98 | 99 | YP\_009824992 |
|  | N | capsid [Bat coronavirus] | 91.03 | 99 | AWV67051 |
|  | NS7a | hypothetical protein ORFx [Bat coronavirus] | 60.29 | 90 | AWV67068 |
|  | NS7b | hypothetical protein [Bat coronavirus HKU9] | 88.57 | 95 | ADM33571 |
|  | NS7c | hypothetical protein ORFy [Eidolon bat coronavirus/Kenya/KY24/2006] | 91.61 | 99 | ADX59472 |
| R\_madagascariensis\_MIZ240 | Genome\* | Bat coronavirus isolate CMR891-892 | 92.6 | 99 | MG693171 |
|  | ORF1a | ORF1a [Bat coronavirus] | 96.5 | 99 | AWV67062 |
|  | ORF1b | ORF1ab polyprotein [Bat coronavirus] | 99.13 | 99 | YP\_009824989 |
|  | S | Spike protein [Bat coronavirus] | 86.94 | 99 | AWV67064 |
|  | NS3 | ORF3 [Bat coronavirus] | 95.3 | 99 | AWV67065 |
|  | E | envelope protein [Eidolon bat coronavirus/Kenya/KY24/2006] | 94.67 | 98 | ADX59468 |
|  | M | membrane protein [Bat coronavirus] | 91.98 | 99 | YP\_009824992 |
|  | N | nucleocapsid protein [Eidolon bat coronavirus/Kenya/KY24/2006] | 91.22 | 99 | ADX59470 |
|  | NS7a | hypothetical protein ORFx [Bat coronavirus] | 80 | 91 | AWV67068 |
|  | NS7b | hypothetical protein [Bat coronavirus HKU9] | 72.22 | 92 | ADM33571 |
|  | NS7c | hypothetical protein ORFy [Eidolon bat coronavirus/Kenya/KY24/2006] | 91.61 | 99 | ADX59472 |

\*BLASTn and †HHPred query indicated by superscript. All other queries were BLASTx. Note that accession number for NCBI corresponds to RCSB Protein Data Bank number for HHPred.ORF1b was queried as the part of ORF1ab excluding ORF1a.