**Supplementary Table S1. Primers for sequencing of DCHBV**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Forward | Position | Reverse | Position |
| 1 | ACTCTCAAACAGGGAACATTCGT | 338-360 | CATCCGACCGGAATAATAATTAAC | 1062-1085 |
| 2 | AATTCTCCAAAGGCTAACAGGTTTA | 830-854 | ATTCCACCAATAGCAGATCACGTAG | 1559-1683 |
| 3 | TACGTCCCTTCCACTCTGAATC | 1278-1299 | CAAGACAGTATGTTGTCCAAAAGTG | 2072-2096 |
| 3 ver.2 | TACGTCCCTTCATCTCTGAATCC | 1278-1300 | CAAAACTGTATGTTGTCCAAAAGTG | 2072-2096 |
| 4 | GAAGAGGAACTTACAGGTAGGGAAC | 1863-1887 | GTCTAGATTGTGACGAGGGAAAAAC | 2755-2779 |
| 5 | CTCGATACCCTGATTATTCTCTTCA | 2564-2588 | CCCTATTGTTTGTATTTTTGTCCAC | 63-87 |
| 6 | CAGTTGGAGACAGAAGTACGGTTAT | 3040-3064 | CATCCATATAAGCAAACACCATACA | 567-591 |
| 7 | CAGGCTTTGTTCCTCCACAT | 2877-2896 | TAACGCGAACAGGAGGAGTT | 2998-3017 |

**Supplementary Table S2. Synthesized DNAs for generating plasmids encoding core proteins**

The start codon and stop codon were underlined, and the HA tag sequence was indicated in red.

|  |  |
| --- | --- |
| **Core protein** | **Codon-optimized DNA sequence** |
| HBV genotype A AON  Accession # LC488828.1 | TTTTGGCAAAGAATTCGCCACCATGTACCCTTACGATGTACCTGACTACGCGGATATCGACCCTTACAAGGAATTTGGGGCGACGGTGGAGCTCCTCTCATTTCTCCCCAGCGATTTTTTTCCGAGTGTGCGGGATCTGCTTGACACGGCCAGCGCATTGTATAGGGAAGCACTGGAATCCCCCGAACATTGCAGCCCGCACCATACGGCGCTTAGGCAGGCAATTTTGTGCTGGGGTGAATTGATGACCCTTGCTACTTGGGTGGGAAATAACCTGGAGGACCCTGCGAGTCGAGACCTTGTAGTCAACTATGTGAATACTAATATGGGGCTCAAAATCAGACAACTCCTTTGGTTTCATATCAGCTGCCTGACATTTGGCCGAGAGACGGTTCTCGAATACCTTGTCTCTTTCGGTGTCTGGATAAGAACTCCCCCAGCCTACCGCCCGCCGAATGCCCCGATACTTAGCACCTTGCCTGAAACTACGGTGGTGAGACGAAGAGACAGGGGTCGATCCCCTCGGAGGCGAACACCCTCACCACGAAGAAGACGAAGTCAGAGTCCTCGAAGGCGGCGGTCCCAATCCAGAGAATCACAGTGTTAGGCTAGCAGATCTTTTT |
| Domestic cat hepadnavirus Japan/KT116/2021  Accession # LC668427.1 | TTTTGGCAAAGAATTCGCCACCATGTACCCTTACGATGTACCTGACTACGCGGATATCGACCCCTATAAGGAGTTTGGGACCACCAGTCAGCTGATAAGTTTCTTGCCCAGTGACTTCTTCCCGGCCTTGAATGACCTCGTCGACACAATCCAGGCGCTTTATGAAGAGGAATTGACGGGTCGCGAGCACTGTTCTCCGCATCACACCGCGTTGAGGGTGTTGCTCAACTGCTGGGAGGAGTCCGTGCGCATGGCCACATGGGTACGGGCAAACGTCGAAGGGGCACCATTGCAGGACGCTATAGTGGCCTATGTTAATTCAACCGTTTCACTGAAACTCCGGCAGCAAATGTGGTTCCACCTTTCTTGTCTCACTTTCGGTCAACACACTGTCCTTGAATTTCTCGTCAGCTTCGGAACCTGGATACGGACGCCAGCACCGTACAGACCGCCTAACGCACCTATTCTCTCCACTCTTCCTGAGCACACGGTAATTAGAGCGCGAGGCGCCGCAAGAAGGCCTGCTAGAAGCCCGCGAAGAAGGACTCCTTCCCCTAGAAGGCGGCGAAGCCAGTCTCCTCGAAGACGCCGATCTCAGTCCCCAACCCAGAGTAACTGCTAGGCTAGCAGATCTTTTT |
| Woodchuck hepatitis virus, complete genome  Accession # NC\_004107.1 | TTTTGGCAAAGAATTCGCCACCATGTACCCTTACGATGTACCTGACTACGCGGATATAGATCCATACAAAGAGTTCGGCTCTTCATATCAATTGTTGAACTTTCTGCCGCTCGATTTCTTTCCTGACTTGAACGCGCTCGTCGACACAGCCACGGCGCTGTACGAGGAGGAGCTGACTGGAAGAGAGCATTGCAGTCCTCATCACACGGCCATTCGACAGGCGTTGGTCTGTTGGGACGAATTGACAAAGCTCATAGCGTGGATGTCTAGTAATATTACGAGTGAACAGGTTAGGACAATTATAGTGAATCACGTAAACGATACCTGGGGGTTGAAAGTTCGCCAAAGTTTGTGGTTTCACCTTTCCTGTCTTACATTTGGTCAGCACACAGTACAGGAGTTCCTGGTCAGTTTCGGGGTTTGGATTCGCACTCCTGCCCCATACAGACCGCCTAACGCACCCATTTTGTCTACTCTTCCGGAGCACACGGTGATAAGGAGGCGCGGGGGAGCCCGGGCTAGTCGATCTCCAAGACGGAGAACACCAAGCCCTAGACGGCGCAGATCACAAAGTCCCAGGCGACGGCGATCACAATCACCCTCAGCCAATTGTTAGGCTAGCAGATCTTTTT |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Supplementary Table S3. Blood test results** | | | | | | | |
| **Complete Blood cell count** | **RI** | **Day 0** | **Day 81** | **Blood Chemistry** | **RI** | **Day 0** | **Day 81** |
| RBC (M/µL) | 6.54-12.2 | 9.42 | 8.75 | Glucose (mg/dL) | 71-159 | 128 | 117 |
| HCt (%) | 30.3-52.3 | 37.1 | 33.7 | Creatinine (mg/dL) | 0.8-2.4 | 1.9 | 1.6 |
| HCB (g/dL) | 9.8-16.2 | 12.2 | 10.6 | BUN (mg/dL) | 16-36 | 28 | 31 |
| MCV (fL) | 35.9-53.1 | 39.4 | 38.5 | Phosphate (mg/dL) | 3.1-7.5 | 5.3 | 4.4 |
| MCH (pg) | 11.8-17.3 | 13 | 12.1 | Calcium (mg/dL) | 7.8-11.3 | 9.4 | 9.2 |
| MCHC (g/dL) | 28.1-31.5 | 32.9 | 31.5 | Na (mmol/L) | 150-165 | 153 | 160 |
| Plt (K/µL) | 151-600 | 472 | 484 | K (mmol/L) | 3.5-5.8 | 3.7 | 3.3 |
| WBC (/µL) | 2870-17020 | 18390 | 12820 | Cl (mmol/L) | 112-129 | 114 | 115 |
| Neutrophil (/µL) | 2300-10290 | 12110 | 10260 | TP (g/dL) | 5.7-8.9 | 8.7 | 8.4 |
| Lymphocyte (/µL) | 920-6880 | 4890 | 1970 | Alb (g/dL) | 2.3-3.9 | 2.8 | 2.5 |
| Monocyte (/µL) | 50-670 | 570 | 400 | Glob (g/dL) | 2.8-5.1 | 5.8 | 5.9 |
| Eosinophil (/µL) | 170-1570 | 720 | 180 | ALT (U/L) | 12-130 | 53 | 75 |
| Basophil (/µL) | 10-260 | 100 | 100 | ALP (U/L) | 14-111 | 67 | 110 |
| RBC: Red blood cells, HCt: Hematocrit, MCV: Mean Corpuscular Volume,  MCH: Mean Corpuscular Hemoglobin, HCB:  Hemoglobin Concentration  in Blood, Plt: Platelet, WBC: White Blood Cell | | | | GGT (U/L) | 0-4 | 0 | 0 |
| T-Bil (mg/dL) | 0.0-0.9 | 0.3 | 0.2 |
| T-Chol (mg/dL) | 65-225 | 144 | 141 |

BUN: Blood Urea nitrogen, TP: Total Protein, Alb: Albumin, Glob: Globulin, ALT: Alanine Aminotransferase, ALP: Alkaline Phosphatase, GGT: γ-glutamyltransferase, T-Bil: Total Bilirubin, T-Chol: Total Cholesterol

**Supplementary Table S4. Sequence identity of polymerase proteins compared with the Japan/MGR/2024 strain**

The sequence showing the highest pairwise identity is marked for emphasis.

|  |  |
| --- | --- |
| **polymerase sequence** | **% Identity with Japan/MGR/2024** |
| AWM63120.1\_|Sydney2016|Australia|2016-04-04|polymerase\_Domestic\_cat\_hepadnavirus | 98.20 |
| XTO96122.1\_|DCHBV\_BR\_557|Brazil|2020|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 87.15 |
| XTO96126.1\_|DCHBV\_BR\_71|Brazil|2020|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 87.15 |
| XTO96130.1\_|2264\_DCHBV|Germany|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 97.12 |
| XTO96134.1\_|2199\_DCHBV|Bulgaria|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 97.00 |
| XTO96138.1\_|2124\_DCHBV|France|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 97.24 |
| XTO96142.1\_|1840\_DCHBV|Germany|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 96.88 |
| XTO96146.1\_|1728\_DCHBV|Croatia|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 96.60 |
| XTO96150.1\_|1615\_DCHBV|Germany|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 97.12 |
| XTO96154.1\_|1313\_DCHBV|Germany|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 95.20 |
| XOB77063.1\_||Spain|2022|polymerase\_Domestic\_cat\_hepadnavirus | 95.68 |
| BFO41096.1\_|Japan/230206-13/2023|Japan|2022-12-20|polymerase\_Domestic\_cat\_hepadnavirus | 98.80 |
| XCG46289.1\_||Brazil|2022|polymerase\_Domestic\_cat\_hepatitis\_B\_virus | 86.31 |
| WQY90872.1\_||Italy|2021|polymerase\_Domestic\_cat\_hepadnavirus | 97.24 |
| WKD80858.1\_|catITA/2021/2\_serum|Italy|2021|polymerase\_Domestic\_cat\_hepadnavirus | 98.08 |
| WKD80862.1\_|catITA/2021/2\_effusion|Italy|2021|polymerase\_Domestic\_cat\_hepadnavirus | 98.08 |
| WFQ84841.1\_|cat41-19/Italy|Italy|2019|polymerase\_Domestic\_cat\_hepadnavirus | 97.36 |
| WBK70522.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.32 |
| WBK70526.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.20 |
| WBK70530.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.32 |
| WBK70534.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.68 |
| WBK70538.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.08 |
| WBK70542.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.56 |
| WBK70546.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.44 |
| WBK70550.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.32 |
| WBK70554.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.68 |
| WBK70558.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.20 |
| WBK70562.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.56 |
| WBK70566.1\_||Hong\_Kong|2020|polymerase\_Domestic\_cat\_hepadnavirus | 98.92 |
| UXP06880.1\_|x1209\_CA|USA|2010-04-17|polymerase\_Domestic\_cat\_hepadnavirus | 97.24 |
| BDG15102.1\_|Rara|Japan|2020-08-18|polymerase\_Domestic\_cat\_hepadnavirus | 86.43 |
| BDD79975.1\_|Japan/KT116/2021|Japan|2021-12-15|polymerase\_Domestic\_cat\_hepadnavirus | 98.56 |
| UGA85174.1\_||Italy|2020-12|polymerase\_Domestic\_cat\_hepadnavirus | 96.76 |
| UGA85178.1\_||Italy|2020-12|polymerase\_Domestic\_cat\_hepadnavirus | 96.16 |
| QFG73559.1\_|UPM\_CHV04|Malaysia|2019-01-01|polymerase\_Domestic\_cat\_hepadnavirus | 98.32 |
| QDX15499.1\_|ITA/2018/165-83|Italy|2018|polymerase\_Domestic\_cat\_hepadnavirus | 97.24 |

**Supplementary Table S5. Sequence identity of surface proteins compared with the Japan/MGR/2024 strain**

The sequence showing the highest pairwise identity is marked for emphasis.

|  |  |
| --- | --- |
| **surface sequence** | **% Identity with Japan/MGR/2024** |
| AWM63121.1\_|Sydney2016|Australia|2016-04-04|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| XTO96123.1\_|DCHBV\_BR\_557|Brazil|2020|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 90.19 |
| XTO96127.1\_|DCHBV\_BR\_71|Brazil|2020|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 89.92 |
| XTO96131.1\_|2264\_DCHBV|Germany|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.41 |
| XTO96135.1\_|2199\_DCHBV|Bulgaria|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.14 |
| XTO96139.1\_|2124\_DCHBV|France|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.67 |
| XTO96143.1\_|1840\_DCHBV|Germany|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.14 |
| XTO96147.1\_|1728\_DCHBV|Croatia|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.41 |
| XTO96151.1\_|1615\_DCHBV|Germany|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.14 |
| XTO96155.1\_|1313\_DCHBV|Germany|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 97.61 |
| XQQ58816.1\_|CV-3/THA/2023|Thailand|2023|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| XQQ58820.1\_|CV-5/THA/2023|Thailand|2023|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| XQQ58824.1\_|SH-48/THA/2023|Thailand|2023|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| XJJ42841.1\_|TX/TVMDL15/2022|USA|2022-03-06|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.02 |
| XOB77064.1\_||Spain|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.08 |
| XJJ42833.1\_|TX/S210535/2021|USA|2021-04|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| XJJ42837.1\_|TX/N210291/2021|USA|2021-01|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| BFO41097.1\_|Japan/230206-13/2023|Japan|2022-12-20|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.94 |
| XCG46290.1\_||Brazil|2022|surface\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 89.39 |
| WQY90871.1\_||Italy|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WPV08072.1\_|Chile\_90|Chile|2022-02-16|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.07 |
| WNT94028.1\_|DCH/NPUST-001/TWN/2023|Taiwan|2023-05-30|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| WNT94032.1\_|DCH/NPUST-002/TWN/2023|Taiwan|2023-05-30|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WNT94036.1\_|DCH/NPUST-003/TWN/2023|Taiwan|2023-05-30|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WNT94040.1\_|DCH/NPUST-004/TWN/2023|Taiwan|2023-06-22|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WNT94044.1\_|DCH/NPUST-005/TWN/2023|Taiwan|2023-06-22|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WNT94048.1\_|DCH/NPUST-006/TWN/2023|Taiwan|2023-06-22|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| WKD80859.1\_|catITA/2021/2\_serum|Italy|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| WKD80863.1\_|catITA/2021/2\_effusion|Italy|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| WKD80867.1\_|catITA/2021/1\_serum|Italy|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 99.20 |
| WJJ09148.1\_|BKKS647-OS/THA/2016|Thailand|2016|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WJJ09152.1\_|PK83-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.35 |
| WJJ09156.1\_|PK83-RS/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.35 |
| WJJ09160.1\_|PK71-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.35 |
| WJJ09164.1\_|KB18-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| WJJ09168.1\_|PK74-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.35 |
| WJJ09172.1\_|PK91-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 96.82 |
| WJJ09176.1\_|PK95-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| WJJ09180.1\_|PK98-B/THA/2022|Thailand|2022|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WHV00950.1\_|TR-03-PEY|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| WHV00954.1\_|TR-07|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WHV00958.1\_|TR-275|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| WHV00962.1\_|TR-296|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WHV00966.1\_|TR-382|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WHV00970.1\_|TR-404|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WHV00974.1\_|TR-409|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WHV00978.1\_|TR-428|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WHV00982.1\_|TR-503|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| WHV00986.1\_|TR-55|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WHV00990.1\_|TR-744|Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WFQ84842.1\_|cat41-19/Italy|Italy|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WCG92573.1\_||Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 94.43 |
| WCF76143.1\_||Turkey|2021|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WBK70523.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WBK70527.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WBK70531.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WBK70535.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.94 |
| WBK70539.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WBK70543.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WBK70547.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WBK70551.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WBK70555.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.67 |
| WBK70559.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| WBK70563.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| WBK70567.1\_||Hong\_Kong|2020|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| UXP06881.1\_|x1209\_CA|USA|2010-04-17|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| BDG15103.1\_|Rara|Japan|2020-08-18|surface\_protein\_Domestic\_cat\_hepadnavirus | 92.31 |
| BDD79976.1\_|Japan/KT116/2021|Japan|2021-12-15|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.94 |
| UGA85175.1\_||Italy|2020-12|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| UGA85179.1\_||Italy|2020-12|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| QOW38036.1\_|CP15H\_THA/2019|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.41 |
| QOW38040.1\_|CP23S\_THA/2016|Thailand|2016|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| QOW38044.1\_|CP3N\_THA/2019|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.94 |
| QOW38048.1\_|CP99H\_THA/2016|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.08 |
| QOW38052.1\_|CP79H\_THA/2019|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 96.02 |
| QOW38056.1\_|CP87H\_THA/2019|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.88 |
| QOW38060.1\_|CP54S\_THA/2016|Thailand|2016|surface\_protein\_Domestic\_cat\_hepadnavirus | 97.61 |
| QOW38064.1\_|CP1N\_THA/2019|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| QOW38068.1\_|CP2N\_THA/2019|Thailand|2019|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.94 |
| QFG73558.1\_|UPM\_CHV04|Malaysia|2019-01-01|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |
| QDX15498.1\_|ITA/2018/165-83|Italy|2018|surface\_protein\_Domestic\_cat\_hepadnavirus | 98.14 |

**Supplementary Table S6. Sequence identity of core proteins compared with the Japan/MGR/2024　strain**

The sequence showing the highest pairwise identity is marked for emphasis.

|  |  |
| --- | --- |
| **core sequence** | **% Identity with Japan/MGR/2024** |
| AWM63122.1\_|Sydney2016|Australia|2016-04-04|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| XTO96125.1\_|DCHBV\_BR\_557|Brazil|2020|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.62 |
| XTO96129.1\_|DCHBV\_BR\_71|Brazil|2020|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.62 |
| XTO96133.1\_|2264\_DCHBV|Germany|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.08 |
| XTO96137.1\_|2199\_DCHBV|Bulgaria|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.54 |
| XTO96141.1\_|2124\_DCHBV|France|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.08 |
| XTO96145.1\_|1840\_DCHBV|Germany|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.08 |
| XTO96149.1\_|1728\_DCHBV|Croatia|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.08 |
| XTO96153.1\_|1615\_DCHBV|Germany|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.54 |
| XTO96157.1\_|1313\_DCHBV|Germany|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 99.08 |
| XQQ58818.1\_|CV-3/THA/2023|Thailand|2023|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| XQQ58822.1\_|CV-5/THA/2023|Thailand|2023|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| XQQ58826.1\_|SH-48/THA/2023|Thailand|2023|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| XOB77061.1\_||Spain|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| XJJ42836.1\_|TX/S210535/2021|USA|2021-04|core\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| XJJ42840.1\_|TX/N210291/2021|USA|2021-01|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| BFO41095.1\_|Japan/230206-13/2023|Japan|2022-12-20|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| XCG46292.1\_||Brazil|2022|core\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 98.62 |
| WQY90870.1\_||Italy|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WNT94030.1\_|DCH/NPUST-001/TWN/2023|Taiwan|2023-05-30|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WNT94034.1\_|DCH/NPUST-002/TWN/2023|Taiwan|2023-05-30|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WNT94038.1\_|DCH/NPUST-003/TWN/2023|Taiwan|2023-05-30|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WNT94042.1\_|DCH/NPUST-004/TWN/2023|Taiwan|2023-06-22|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WNT94046.1\_|DCH/NPUST-005/TWN/2023|Taiwan|2023-06-22|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WNT94050.1\_|DCH/NPUST-006/TWN/2023|Taiwan|2023-06-22|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WKD80861.1\_|catITA/2021/2\_serum|Italy|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WKD80865.1\_|catITA/2021/2\_effusion|Italy|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09149.1\_|BKKS647-OS/THA/2016|Thailand|2016|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WJJ09153.1\_|PK83-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09157.1\_|PK83-RS/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09161.1\_|PK71-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09165.1\_|KB18-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WJJ09169.1\_|PK74-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09173.1\_|PK91-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09177.1\_|PK95-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WJJ09181.1\_|PK98-B/THA/2022|Thailand|2022|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00952.1\_|TR-03-PEY|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WHV00956.1\_|TR-07|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00960.1\_|TR-275|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00964.1\_|TR-296|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00968.1\_|TR-382|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00972.1\_|TR-404|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00976.1\_|TR-409|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00980.1\_|TR-428|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WHV00984.1\_|TR-503|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00988.1\_|TR-55|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WHV00992.1\_|TR-744|Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WFQ84844.1\_|cat41-19/Italy|Italy|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| BDX51364.1\_|53768|Japan|2020-08-05|core\_protein\_Domestic\_cat\_hepadnavirus | 100.00 |
| BDX51365.1\_|56702|Japan|2022-03-04|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WCG92575.1\_||Turkey|2021|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WBK70525.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70529.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| WBK70533.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70537.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70541.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70545.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70549.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70553.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70557.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70561.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70565.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| WBK70569.1\_||Hong\_Kong|2020|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| BDG15101.1\_|Rara|Japan|2020-08-18|core\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| BDD79974.1\_|Japan/KT116/2021|Japan|2021-12-15|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| UGA85177.1\_||Italy|2020-12|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| UGA85181.1\_||Italy|2020-12|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| QOW38038.1\_|CP15H\_THA/2019|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| QOW38042.1\_|CP23S\_THA/2016|Thailand|2016|core\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| QOW38046.1\_|CP3N\_THA/2019|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 98.17 |
| QOW38050.1\_|CP99H\_THA/2016|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| QOW38054.1\_|CP79H\_THA/2019|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| QOW38058.1\_|CP87H\_THA/2019|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| QOW38062.1\_|CP54S\_THA/2016|Thailand|2016|core\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| QOW38066.1\_|CP1N\_THA/2019|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| QOW38070.1\_|CP2N\_THA/2019|Thailand|2019|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |
| QFG73557.1\_|UPM\_CHV04|Malaysia|2019-01-01|core\_protein\_Domestic\_cat\_hepadnavirus | 99.54 |
| QDX15497.1\_|ITA/2018/165-83|Italy|2018|core\_protein\_Domestic\_cat\_hepadnavirus | 99.08 |

**Supplementary Table S7. Sequence identity of X proteins compared with the Japan/MGR/2024 strain**

The sequence showing the highest pairwise identity is marked for emphasis.

|  |  |
| --- | --- |
| **X sequence** | **% Identity with Japan/MGR/2024** |
| AWM63123.1\_|Sydney2016|Australia|2016-04-04|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| XTO96124.1\_|DCHBV\_BR\_557|Brazil|2020|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 80.69 |
| XTO96128.1\_|DCHBV\_BR\_71|Brazil|2020|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 80.69 |
| XTO96132.1\_|2264\_DCHBV|Germany|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 96.55 |
| XTO96136.1\_|2199\_DCHBV|Bulgaria|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 97.24 |
| XTO96140.1\_|2124\_DCHBV|France|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 97.24 |
| XTO96144.1\_|1840\_DCHBV|Germany|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 97.24 |
| XTO96148.1\_|1728\_DCHBV|Croatia|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 97.86 |
| XTO96152.1\_|1615\_DCHBV|Germany|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 95.17 |
| XTO96156.1\_|1313\_DCHBV|Germany|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 96.55 |
| XQQ58817.1\_|CV-3/THA/2023|Thailand|2023|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| XQQ58821.1\_|CV-5/THA/2023|Thailand|2023|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| XQQ58825.1\_|SH-48/THA/2023|Thailand|2023|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| XOB77062.1\_||Spain|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| XJJ42835.1\_|TX/S210535/2021|USA|2021-04|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| XJJ42839.1\_|TX/N210291/2021|USA|2021-01|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| BFO41094.1\_|Japan/230206-13/2023|Japan|2022-12-20|X\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| XCG46291.1\_||Brazil|2022|X\_protein\_Domestic\_cat\_hepatitis\_B\_virus | 77.24 |
| WQY90869.1\_||Italy|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WNT94029.1\_|DCH/NPUST-001/TWN/2023|Taiwan|2023-05-30|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WNT94033.1\_|DCH/NPUST-002/TWN/2023|Taiwan|2023-05-30|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WNT94037.1\_|DCH/NPUST-003/TWN/2023|Taiwan|2023-05-30|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WNT94041.1\_|DCH/NPUST-004/TWN/2023|Taiwan|2023-06-22|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WNT94045.1\_|DCH/NPUST-005/TWN/2023|Taiwan|2023-06-22|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WNT94049.1\_|DCH/NPUST-006/TWN/2023|Taiwan|2023-06-22|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WKD80860.1\_|catITA/2021/2\_serum|Italy|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WKD80864.1\_|catITA/2021/2\_effusion|Italy|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WJJ09147.1\_|BKKS647-OS/THA/2016|Thailand|2016|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| WJJ09151.1\_|PK83-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WJJ09155.1\_|PK83-RS/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WJJ09159.1\_|PK71-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WJJ09163.1\_|KB18-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| WJJ09167.1\_|PK74-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WJJ09171.1\_|PK91-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 94.48 |
| WJJ09175.1\_|PK95-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 97.93 |
| WJJ09179.1\_|PK98-B/THA/2022|Thailand|2022|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| WHV00951.1\_|TR-03-PEY|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WHV00955.1\_|TR-07|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WHV00959.1\_|TR-275|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WHV00963.1\_|TR-296|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WHV00967.1\_|TR-382|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 97.93 |
| WHV00971.1\_|TR-404|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WHV00975.1\_|TR-409|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 93.79 |
| WHV00979.1\_|TR-428|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WHV00983.1\_|TR-503|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| WHV00987.1\_|TR-55|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WHV00991.1\_|TR-744|Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 94.48 |
| WFQ84843.1\_|cat41-19/Italy|Italy|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 97.93 |
| WCG92574.1\_||Turkey|2021|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| WBK70524.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| WBK70528.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WBK70532.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| WBK70536.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WBK70540.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WBK70544.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| WBK70548.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WBK70552.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| WBK70556.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 96.55 |
| WBK70560.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WBK70564.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| WBK70568.1\_||Hong\_Kong|2020|X\_protein\_Domestic\_cat\_hepadnavirus | 94.48 |
| UXP06879.1\_|x1209\_CA|USA|2010-04-17|X\_protein\_Domestic\_cat\_hepadnavirus | 97.24 |
| BDG15100.1\_|Rara|Japan|2020-08-18|X\_protein\_Domestic\_cat\_hepadnavirus | 79.31 |
| BDD79973.1\_|Japan/KT116/2021|Japan|2021-12-15|X\_protein\_Domestic\_cat\_hepadnavirus | 99.31 |
| UGA85176.1\_||Italy|2020-12|X\_protein\_Domestic\_cat\_hepadnavirus | 98.62 |
| UGA85180.1\_||Italy|2020-12|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| QOW38037.1\_|CP15H\_THA/2019|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QOW38041.1\_|CP23S\_THA/2016|Thailand|2016|X\_protein\_Domestic\_cat\_hepadnavirus | 95.17 |
| QOW38045.1\_|CP3N\_THA/2019|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 93.79 |
| QOW38049.1\_|CP99H\_THA/2016|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 93.10 |
| QOW38053.1\_|CP79H\_THA/2019|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QOW38057.1\_|CP87H\_THA/2019|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QOW38061.1\_|CP54S\_THA/2016|Thailand|2016|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QOW38065.1\_|CP1N\_THA/2019|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QOW38069.1\_|CP2N\_THA/2019|Thailand|2019|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QFG73556.1\_|UPM\_CHV04|Malaysia|2019-01-01|X\_protein\_Domestic\_cat\_hepadnavirus | 95.86 |
| QDX15496.1\_|ITA/2018/165-83|Italy|2018|X\_protein\_Domestic\_cat\_hepadnavirus | 97.93 |

**Supplementary Table S8. Sequence identity of the full genome compared with the Japan/MGR/2024 strain**

The sequence showing the highest pairwise identity is marked for emphasis.

|  |  |
| --- | --- |
| **full genome sequence** | **% Identity with Japan/MGR/2024** |
| MH307930.1\_Domestic\_cat\_hepadnavirus\_isolate\_Sydney2016\_complete\_genome\_Australia\_2016-04-04 | 98.08 |
| PQ468307.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_DCHBV\_BR\_557\_complete\_genome\_Brazil\_2020 | 89.09 |
| PQ468308.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_DCHBV\_BR\_71\_complete\_genome\_Brazil\_2020 | 89.06 |
| PQ468309.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_2264\_DCHBV\_complete\_genome\_Germany\_2022 | 97.26 |
| PQ468310.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_2199\_DCHBV\_complete\_genome\_Bulgaria\_2022 | 97.35 |
| PQ468311.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_2124\_DCHBV\_complete\_genome\_France\_2022 | 97.35 |
| PQ468312.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_1840\_DCHBV\_complete\_genome\_Germany\_2022 | 97.26 |
| PQ468313.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_1728\_DCHBV\_complete\_genome\_Croatia\_2022 | 97.21 |
| PQ468314.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_1615\_DCHBV\_complete\_genome\_Germany\_2022 | 97.29 |
| PQ468315.1\_Domestic\_cat\_hepatitis\_B\_virus\_isolate\_1313\_DCHBV\_complete\_genome\_Germany\_2022 | 96.37 |
| PV392816.1\_Domestic\_cat\_hepadnavirus\_isolate\_CV-3/THA/2023\_complete\_genome\_Thailand\_2023 | 98.49 |
| PV392817.1\_Domestic\_cat\_hepadnavirus\_isolate\_CV-5/THA/2023\_complete\_genome\_Thailand\_2023 | 98.49 |
| PV392818.1\_Domestic\_cat\_hepadnavirus\_isolate\_SH-48/THA/2023\_complete\_genome\_Thailand\_2023 | 98.52 |
| PQ288049.1\_Domestic\_cat\_hepadnavirus\_isolate\_TX/TVMDL15/2022\_complete\_genome\_USA\_2022-03-06 | 97.98 |
| PP347721.1\_Domestic\_cat\_hepadnavirus\_strain\_SPA/2022/iberian\_lynx/296-23-81\_complete\_genome\_Spain\_2022 | 96.25 |
| PQ097000.1\_Domestic\_cat\_hepadnavirus\_isolate\_TX/S210535/2021\_complete\_genome\_USA\_2021-04 | 97.89 |
| PQ097001.1\_Domestic\_cat\_hepadnavirus\_isolate\_TX/N210291/2021\_complete\_genome\_USA\_2021-01 | 97.76 |
| LC830691.1\_Domestic\_cat\_hepadnavirus\_Japan/230206-13/2023\_DNA\_complete\_genome\_Japan\_2022-12-20 | 99.21 |
| PP586179.1\_Domestic\_cat\_hepatitis\_B\_virus\_strain\_Hovet\_Feevale\_D22/48\_complete\_genome\_Brazil\_2022 | 89.03 |
| OR389995.1\_Domestic\_cat\_hepadnavirus\_strain\_ITA/2021/665\_complete\_genome\_Italy\_2021 | 97.19 |
| OR635616.1\_Domestic\_cat\_hepadnavirus\_isolate\_Chile\_90\_partial\_genome\_Chile\_2022-02-16 | 96.83 |
| OR515499.1\_Domestic\_cat\_hepadnavirus\_isolate\_DCH/NPUST-001/TWN/2023\_complete\_genome\_Taiwan\_2023-05-30 | 97.16 |
| OR515500.1\_Domestic\_cat\_hepadnavirus\_isolate\_DCH/NPUST-002/TWN/2023\_complete\_genome\_Taiwan\_2023-05-30 | 97.19 |
| OR515501.1\_Domestic\_cat\_hepadnavirus\_isolate\_DCH/NPUST-003/TWN/2023\_complete\_genome\_Taiwan\_2023-05-30 | 97.19 |
| OR515502.1\_Domestic\_cat\_hepadnavirus\_isolate\_DCH/NPUST-004/TWN/2023\_complete\_genome\_Taiwan\_2023-06-22 | 97.26 |
| OR515503.1\_Domestic\_cat\_hepadnavirus\_isolate\_DCH/NPUST-005/TWN/2023\_complete\_genome\_Taiwan\_2023-06-22 | 97.22 |
| OR515504.1\_Domestic\_cat\_hepadnavirus\_isolate\_DCH/NPUST-006/TWN/2023\_complete\_genome\_Taiwan\_2023-06-22 | 98.45 |
| OQ859619.1\_Domestic\_cat\_hepadnavirus\_isolate\_catITA/2021/2\_serum\_complete\_genome\_Italy\_2021 | 98.08 |
| OQ859620.1\_Domestic\_cat\_hepadnavirus\_isolate\_catITA/2021/2\_effusion\_complete\_genome\_Italy\_2021 | 98.08 |
| OQ859621.1\_Domestic\_cat\_hepadnavirus\_isolate\_catITA/2021/1\_serum\_partial\_genome\_Italy\_2021 | 98.16 |
| OQ362106.1\_Domestic\_cat\_hepadnavirus\_isolate\_BKKS647-OS/THA/2016\_complete\_genome\_Thailand\_2016 | 98.27 |
| OQ362107.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK83-B/THA/2022\_complete\_genome\_Thailand\_2022 | 96.37 |
| OQ362108.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK83-RS/THA/2022\_complete\_genome\_Thailand\_2022 | 96.37 |
| OQ362109.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK71-B/THA/2022\_complete\_genome\_Thailand\_2022 | 96.31 |
| OQ362110.1\_Domestic\_cat\_hepadnavirus\_isolate\_KB18-B/THA/2022\_complete\_genome\_Thailand\_2022 | 98.33 |
| OQ362111.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK74-B/THA/2022\_complete\_genome\_Thailand\_2022 | 96.28 |
| OQ362112.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK91-B/THA/2022\_complete\_genome\_Thailand\_2022 | 96.09 |
| OQ362113.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK95-B/THA/2022\_complete\_genome\_Thailand\_2022 | 96.09 |
| OQ362114.1\_Domestic\_cat\_hepadnavirus\_isolate\_PK98-B/THA/2022\_complete\_genome\_Thailand\_2022 | 98.52 |
| OQ130240.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-03-PEY\_complete\_genome\_Turkey\_2021 | 97.60 |
| OQ130241.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-07\_complete\_genome\_Turkey\_2021 | 97.60 |
| OQ130242.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-275\_complete\_genome\_Turkey\_2021 | 97.10 |
| OQ130243.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-296\_complete\_genome\_Turkey\_2021 | 97.26 |
| OQ130244.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-382\_complete\_genome\_Turkey\_2021 | 97.57 |
| OQ130245.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-404\_complete\_genome\_Turkey\_2021 | 97.51 |
| OQ130246.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-409\_complete\_genome\_Turkey\_2021 | 97.32 |
| OQ130247.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-428\_complete\_genome\_Turkey\_2021 | 97.38 |
| OQ130248.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-503\_complete\_genome\_Turkey\_2021 | 97.35 |
| OQ130249.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-55\_complete\_genome\_Turkey\_2021 | 97.38 |
| OQ130250.1\_Domestic\_cat\_hepadnavirus\_isolate\_TR-744\_complete\_genome\_Turkey\_2021 | 97.32 |
| ON293153.1\_Domestic\_cat\_hepadnavirus\_strain\_TR-SV15\_complete\_genome\_Turkey\_2021 | 95.71 |
| ON325584.1\_Domestic\_cat\_hepadnavirus\_strain\_TR-SV8\_complete\_genome\_Turkey\_2021 | 96.75 |
| OP643851.1\_Domestic\_cat\_hepadnavirus\_strain\_HK01/2020/1\_17\_complete\_genome\_Hong\_Kong\_2020 | 98.20 |
| OP643852.1\_Domestic\_cat\_hepadnavirus\_strain\_HK02/2020/14\_complete\_genome\_Hong\_Kong\_2020 | 98.20 |
| OP643853.1\_Domestic\_cat\_hepadnavirus\_strain\_HK03/2020/16\_complete\_genome\_Hong\_Kong\_2020 | 98.36 |
| OP643854.1\_Domestic\_cat\_hepadnavirus\_strain\_HK04/2020/152034\_complete\_genome\_Hong\_Kong\_2020 | 98.42 |
| OP643855.1\_Domestic\_cat\_hepadnavirus\_strain\_HK05/2020/160049\_complete\_genome\_Hong\_Kong\_2020 | 98.33 |
| OP643856.1\_Domestic\_cat\_hepadnavirus\_strain\_HK06/2020/036085578\_complete\_genome\_Hong\_Kong\_2020 | 98.23 |
| OP643857.1\_Domestic\_cat\_hepadnavirus\_strain\_HK07/2020/036349519\_complete\_genome\_Hong\_Kong\_2020 | 98.39 |
| OP643858.1\_Domestic\_cat\_hepadnavirus\_strain\_HK08/2020/036521029\_complete\_genome\_Hong\_Kong\_2020 | 98.33 |
| OP643859.1\_Domestic\_cat\_hepadnavirus\_strain\_HK09/2020/036528103\_complete\_genome\_Hong\_Kong\_2020 | 98.27 |
| OP643860.1\_Domestic\_cat\_hepadnavirus\_strain\_HK10/2020/036597560\_complete\_genome\_Hong\_Kong\_2020 | 98.36 |
| OP643861.1\_Domestic\_cat\_hepadnavirus\_strain\_HK11/2020/604046832\_complete\_genome\_Hong\_Kong\_2020 | 98.39 |
| OP643862.1\_Domestic\_cat\_hepadnavirus\_strain\_HK12/2020/160775\_complete\_genome\_Hong\_Kong\_2020 | 98.39 |
| OM785182.2\_Domestic\_cat\_hepadnavirus\_isolate\_cat41-19/Italy\_complete\_genome\_Italy\_2019 | 97.22 |
| OP094657.1\_Domestic\_cat\_hepadnavirus\_isolateሉCA\_complete\_genome\_USA\_2010-04-17 | 96.98 |
| LC685967.1\_Domestic\_cat\_hepadnavirus\_Rara\_DNA\_complete\_genome\_Japan\_2020-08-18 | 89.25 |
| LC668427.1\_Domestic\_cat\_hepadnavirus\_Japan/KT116/2021\_DNA\_complete\_genome\_Japan\_2021-12-15 | 99.09 |
| OK574325.1\_Domestic\_cat\_hepadnavirus\_strain\_DCH/102\_S/cat/ITA\_complete\_genome\_Italy\_2020-12 | 97.04 |
| OK574326.1\_Domestic\_cat\_hepadnavirus\_strain\_DCH/139\_S/cat/ITA\_complete\_genome\_Italy\_2020-12 | 96.81 |
| MT026708.1\_UNVERIFIED:\_Domestic\_cat\_hepadnavirus\_isolate\_200101071\_complete\_genome\_Russia\_2019-11-18 | 97.28 |
| MT506039.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP15H\_THA/2019\_complete\_genome\_Thailand\_2019 | 98.01 |
| MT506040.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP23S\_THA/2016\_complete\_genome\_Thailand\_2016 | 97.41 |
| MT506041.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP3N\_THA/2019\_complete\_genome\_Thailand\_2019 | 98.14 |
| MT506042.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP99H\_THA/2016\_complete\_genome\_Thailand\_2019 | 96.72 |
| MT506043.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP79H\_THA/2019\_complete\_genome\_Thailand\_2019 | 96.22 |
| MT506044.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP87H\_THA/2019\_complete\_genome\_Thailand\_2019 | 96.47 |
| MT506045.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP54S\_THA/2016\_complete\_genome\_Thailand\_2016 | 96.40 |
| MT506046.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP1N\_THA/2019\_complete\_genome\_Thailand\_2019 | 98.11 |
| MT506047.1\_Domestic\_cat\_hepadnavirus\_isolate\_CP2N\_THA/2019\_complete\_genome\_Thailand\_2019 | 98.42 |
| MK902920.1\_Domestic\_cat\_hepadnavirus\_isolate\_UPM\_CHV04\_complete\_genome\_Malaysia\_2019-01-01 | 98.33 |
| MK117078.1\_Domestic\_cat\_hepadnavirus\_isolate\_ITA/2018/165-83\_complete\_genome\_Italy\_2018 | 97.32 |