

## Supplementary Table S1 to Table S4

**Table S1. The information on the reference strains of CCoV**

Isolate	Accession No.	Country	Collection Date	Submission Date	Genotype
12/20	OX335549.1	United Kingdom	/	13-SEP-2022	I
62/22	OX335548.1	United Kingdom	/	13-SEP-2022	I
59/22	OX335546.1	United Kingdom	/	13-SEP-2022	I
10/22	OX335534.1	United Kingdom	/	13-SEP-2022	I
46/22	OX335530.1	United Kingdom	/	13-SEP-2022	I
38/22	OX335545.1	United Kingdom	/	13-SEP-2022	I
13/22	OX335535.1	United Kingdom	/	13-SEP-2022	I
450/07	GU146061.1	Italy	Oct-2007	30-OCT-2009	IIb
66/09AY390344	HQ450376.1	Greece	2009	28-OCT-2010	IIb
CCoV/7/2020/AUS	MW383487.1	Australia	12-Mar-2020	6-DEC-2020	IIb
174/06	EU856362.1	Italy	Mar-2006	27-JUN-2008	IIb
341/05	EU856361.1	Italy	Dec-2005	27-JUN-2008	IIb
119/08	EU924791.1	Italy	Mar-2008	25-JUL-2008	IIb
Z19	MZ420153.1	Haiti	15-Mar-2017	18-JUN-2021	IIb
CoV/dog/HCM47/2015	LC190907.1	Viet Nam	2015-06	11-OCT-2016	IIb
CB/05	KP981644.1	Italy	2005	16-MAR-2015	IIa
NA/09	JF682842.1	Greece	2009	13-MAR-2011	IIa
JS2103	OM055788.1	China	10-Mar-2021	28-DEC-2021	IIa
S378	KC175341.1	USA: Ithaca, NY	1978	15-NOV-2012	IIa
1-71	JQ404409.1	USA	/	11-JAN-2012	IIa
HC2	AY884048.1	China	/	11-JAN-2005	IIa
SH32_2001	MF095847.1	Tanzania	2001	11-MAY-2017	IIa
fc1	AB781790.1	Japan	/	07-FEB-2013	IIa
04-0709	FJ009114.1	United Kingdom	/	11-AUG-2008	IIa
B639_ZJ_2019	MT114538.1	China	19-Sep-2019	25-FEB-2020	IIa
CCoV/GD/2020/X9	MZ320954.1	China	Feb-2020	31-MAY-2021	IIa
GH8-2	OM950728.1	China	2020	08-MAR-2022	IIa
UPPS2/04	DQ431019.1	Sweden	/	03-MAR-2006	IIa
NS-28	MT136074.1	China	09-Mar-2018	02-MAR-2020	IIa
A76	JN856008.1	USA: Ithaca, NY	1976	16-NOV-2012	IIa
2020/7	MT906865.1	United Kingdom	2020	20-AUG-2020	IIa
742	KF308994.1	Brazil	2006	01-JUL-2013	IIa
CD25_21032412	OQ623725.1	China	24-Mar-2021	12-MAR-2023	IIa
JS1706	MN078152.1	China: Jiangsu	2017	17-JUN-2019	IIa
CCoV/GY0608	MW718811.1	China	2020	05-MAR-2021	IIa
859	KF308995.1	Brazil	2007	01-JUL-2013	IIa

**Table S2. The information on the reference strains of CRV**

Isolate	Accession No.	Country	Collection Date	Submission Date	Genotype
B1-R5	MW254133.1	China	2019	10-NOV-2020	G3
B8-R6	MW254143.1	China	2019	10-NOV-2020	G3
B12-R4	MW254137.1	China	2019	10-NOV-2020	G3
SD-MO5	OM450983.1	China	2021	27-JAN-2022	G3
B5-R3	MW254141.1	China	2021	27-JAN-2022	G3
B11-R3	MW254136.1	China	2019	10-NOV-2020	G3
B4-R3	MW254139.1	China	2019	10-NOV-2020	G3
B8-R2	MW254140.1	China	2019	10-NOV-2020	G3
B12-R1	MW254142.1	China	2019	10-NOV-2020	G3
B1-R2	MW254145.1	China	2019	10-NOV-2020	G3
B7-R2	MW254144.1	China	2019	10-NOV-2020	G3
B3-R2	MW24146.1	China	2019	10-NOV-2020	G3
CU128	MT364840.1	Thailand	2017	21-APR-2020	G3P [3]
CU132	MT364851.1	Thailand	2017	21-APR-2020	G3P [3]
CU23379	MT364873.1	Thailand	2019	21-APR-2020	G3P [3]
WH	OL388441.1	China	26-Oct-2020	05-NOV-2021	G3P [3]
CU126	MT364829.1	Thailand	2017	21-APR-2020	G3P [3]
12638	LC340021.1	Japan	2014	29-NOV-2017	G3P [3]
IAL-M202	ON464739.1	Brazil	2017	09-MAY-2022	G3P [3]
IAL-M414	ON464741.1	Brazil	2017	09-MAY-2022	G3P [3]
CAN2060	ON015838.1	Brazil	2020	17-MAR-2022	G3P [3]
CAN2059	ON015837.1	Brazil	2020	17-MAR-2022	G3P [3]

**Table S3. The information on the reference strains of CPV**

Isolate	Accession No.	Country	Collection Date	Submission Date	Genotype
CVASU parvovirus1	MT629886.1	Bangladesh	19-Jun-2018	15-JUN-2020	2a
LN1-2020	OM964631.1	China: Liaoning	Aug-2020	09-MAR-2022	2a
Sho-nan	AB128923.1	Japan	/	10-DEC-2003	2a
HN1	MK357733.1	Viet Nam	Nov-201	02-JAN-2019	2a
BJ-1	MN101726.1	China: Beijing	Mar-2018	25-JUN-2019	2a
Roseworthy/SA/5371/2019	MZ362882.1	Australia	2019	01-JUN-2021	2a
Dalmatian_ANDIV/New CPV-2a/2017/Ind	MT920963.1	India	2017	22-AUG-2020	2a
EC/01/2017	MG264075.1	Ecuador	06-Jun-2017	24-OCT-2017	2a
04S33	DQ026002.1	France	/	03-MAY-2005	2a
CPV-2a/Erbil2/2016	OL546621.1	Iraq	Feb-2016	14-NOV-2021	2a
HLJ/01	KM386821.1	China	01-Jun-2014	21-AUG-2014	2a
DH426	EF599096.1	South Korea	/	08-MAY-2007	2a
T25	U72697.1	Taiwan	/	27-SEP-199	2a
CPV-	OP208806.1	China	2020	10-AUG-2022	2a

2a/pangolin/China/P2/20					
3216	MW380186.1	India: Uttarakhand	2014	17-DEC-2020	2a
EC/24/2017	MG264078.1	Ecuador	06-Jun-2017	24-OCT-2017	2b
CPV-gd7	KM386954.1	China: Zhejiang	2014	22-AUG-2014	2b
2b_ME20_ECU2012	KF149985.1	Ecuador	2012	26-MAY-2013	2b
CPV-2b/Sul2/2016	OL546610.1	Iraq	Aug-2016	14-NOV-2021	2b
HNI-1-18	AB120728.1	Japan	/	22-SEP-2003	2b
Arg5	JF414817.1.1	Argentina: San Isidro	01-Oct-2003	21-FEB-2011	2b
Taichung	AY869724.1	China: Taiwan	/	28-DEC-2004	2b
CPV-2b-wuhan2	KC881278.1	China	2010	10-APR-2013	2b
9985-46	LC270892.1	Japan: Kyoto	/	18-MAY-2017	2b
HN-3	DQ177497.1	China	/	20-AUG-2005	2b
CPV2b-LIVA-UFOV2_2019	OL373925.1	Brazil	22-Oct-2019	3-NOV-2021	2b
3634	MW380200.1	India: Uttarakhand	2009	17-DEC-2020	2b
nn168113	MK332000.1	China	13-Aug-201	19-DEC-2018	2c
guangzhou/QH3/2018	MT488458.1	China	2018	16-MAY-2020	2c
2c_ME28_ECU20	KF149984.1	Ecuador	2012	26-MAY-2013	2c
CPV-2c/Sul7/2017	OL546613.1	Iraq	Jul-2017	14-NOV-2021	2c
LCPV V139	AB054222.2	Japan	/	16-JAN-2001	2c
W25	OM523077.1	China	2021	04-FEB-2022	2c
CPV_ISSSI_52238_1	KX434460.1	Italy	02-Oct-2012	22-JUN-2016	2c
NIG/2021/265.21-88	ON063561.1	Nigeria	2021	22-MAR-2022	2c
DPHSAUBD11N001	ON256217.1	Bangladesh	19-Nov-2020	16-APR-2022	2c
CADRAD-IVRI_569CAD2c_India/2021	MZ223471.1	India	2021	17-MAY-2021	2c

**Table S4. The information on the reference strains of CDV**

Isolate	Accession No.	Country	Collection Date	Submission Date	Genotype
PS	JN896331.1	China	2010	25-OCT-2011	Asia-1
CDV6_TH/2014	MH496779.1	Thailand	2014	15-JUN-2018	Asia-1
CDV7_TH/2014	MH496776.1	Thailand	2014	15-JUN-2018	Asia-1
CDV-RD-JL	KJ848781.1	China	Apr-2014	15-MAY-2014	Asia-1
Louguantai 1	KP677502.1	China: Xian	04-Jan-2015	20-JAN-2015	Asia-1
giant panda/SX/2014	KP793921.1	China: Shanxi	2014	13-FEB-2015	Asia-1
Asia-1/Canine/NTU 2005-1	MK431532.1	Taiwan	Mar-2005	23-JAN-2019	Asia-1
BT	MW713449.1	China: Jilin	2019	05-MAR-2021	Asia-1
HLJ21-10	ON206669.1	China	Oct-2021	08-APR-2022	Asia-1

CDV-ZC	KJ994343.1	China	Oct-2013	11-JUN-2014	Asia-1
CDV SY	KJ466106.1	China	2012	17-FEB-2014	/
CDV/dog/HCM/33/140816	LC159587.1	Viet Nam	2014-08-16	14-JUN-2016	/
GS0904-8	HM623892.1	China: Gansu	Apr-2009	01-JUL-2010	/
HD	EU409838.1	China	/	16-JAN-2008	/
NT	OL675426.1	China	09-Aug-2020	22-NOV-2021	/
GS0812-4	HQ850146.1	China: Gansu	Dec-2008	28-DEC-2010	/
LN (10)1	KP765464.1	China: Liaoning	2010	10-FEB-2015	/
Kaohsiung	DQ522030.1	China: Taiwan	/	01-MAY-2006	/
GZ0803	KC590511.1	China: Guangzhou	28-Nov-2012	07-FEB-2013	/
NJ01	JF965338.1	China	May-2011	16-MAY-2011	/
BJ16B53	MF926600.1	China	Sep-2016	07-SEP-2017	/
SDZC (17)M2	MK408454.1	China: Shandong	Jun-2017	14-JAN-2019	/
GS0812-7	HQ850150.1	China: Gansu	Dec-2008	28-DEC-2010	/
SD16F	MH337872.1	China	Jul-2016	11-MAY-2018	/
SD16F-P35	OQ448874.1	China	Sep-2022	16-FEB-2023	/
01-2689	AY649446.1	USA	/	09-JUN-2004	/
SDWD (14)9	KU552083.1	China	May-2014	18-JAN-2016	/
A75/17	AF164967.1	Switzerland	/	02-JUL-1999	/
DL1	KM386684.1	China	Oct-2013	21-AUG-2014	/
vaccine X	EU072200.1	Hungary	2006	30-JUL-2007	/
Ohio R252	KF640687.1	USA: Ohio	/	06-SEP-2013	/
ZD01	EF445050.1	China	/	19-FEB-2007	/
PLE806	MT932504.1	USA	01-Sep-1992	26-AUG-2020	/
HLJ2-07	HQ540292.1	China	2007	03-NOV-2010	/
GS20-11	MW600730.1	China	10-Dec-2020	14-FEB-2021	/
GS20-11	MW600730.1	China	10-Dec-2020	14-FEB-2021	/
ZYL	KX499865.1	China	2015	01-JUL-2016	/
SH202003	MW239877.1	China	28-Aug-2020	09-NOV-2020	/
GS0903-4	HM596311.1	China: Gansu	Mar-2009	29-JUN-2010	/
MS01	DQ887066.1	China	/	07-AUG-2006	/
PS-N	JX276747.1	China	06-Jul-2009	05-JUL-2012	/
SD(14)11	KP738610.1	China	01-Oct-2014	30-JAN-2015	/
98-2646	AY542312.2	USA	/	24-JUN-2004	/