

Table S1. The reference AstV strains used in this study.

Strains name	Hosts	GenBank accession no.	Collection date	Countries
TAstV/TX/00	Turkey	EU143850	-	USA
-	Turkey	NC_002470	-	USA
TAstV/CA/00	Turkey	EU143844	-	USA
ANV/CHN/BJCP510-2/2018	Chicken	MN732558	2018	China
DA93	Duck	FJ919228	-	China
C-NGB	Duck	NC_012437	2008	USA
DA06	Duck	FJ919225	-	China
CPH	Duck	KJ020899	2013	China
CAstV/Poland/G059/2014	Chicken	KT886453	2014	Poland
GA2011	Chicken	JF414802	2011	USA
CAstV/INDIA/ANAN D/2016	Chicken	KY038163	2016	India
1	Avian_nephritis	HM029238	2009	China
SH10	Pigeon_avian_nephritis	HQ889774	2010	China
TAstV/MN/01	Turkey	EU143847	-	USA
ZJLD	Goose	OK571389	2020	China
TZ03	Goose	MW353015	2019	China
HNNY0620	Goose	MZ367612	2020	China
HNXX-6/China/2020	Goose	MW592379	2020	China
HNSQ-6/China/2020	Goose	MW592378	2020	China
HNKF-1/China/2020	Goose	MW592377	2020	China
SDPD	Goose	MW345727	2019	China
SCCD	Goose	MW340534	2019	China
AstV/SDTA	Goose	MN809622	-	China
SDXT	Goose	MN399857	-	China
AstV/SDPY/Goose/1116/17	Goose	MH052598	2017	China
ZJC14	Goose	OK571391	2020	China
JRMS	Goose	OK571390	2020	China
JX01/China/2021	Goose	MZ576222	2021	China
AAstV/Goose/CHN/2019/DY-19	Goose	MT708902	2019	China
XT1	Goose	MW413813	2020	China
Astv/Goose/Guangdong/g/1810MFC/2018	Goose	MN109957	2018	China
Astv/Goose/Guangdong/g/1808CCF/2018	Goose	MN109956	2018	China
Astv/Goose/Guangdong/g/1803LZM/2018	Goose	MN109955	2018	China

Astv/Goose/Guangdon					
g/1807LWG/2018	Goose	MN109954	2018		China
Astv/Goose/Guangdon					
g/1812LMG/2018	Goose	MN127959	2018		China
Astv/Goose/Guangdon					
g/1811LHC/2018	Goose	MN127958	2018		China
Astv/Goose/Guangdon					
g/1811DWM/2018	Goose	MN127957	2018		China
Astv/Goose/Guangdon					
g/1811CFC/2018	Goose	MN127956	2018		China
Astv/Goose/Guangdon					
g/1901SM/2019	Goose	MN127955	2019		China
Astv/Goose/Guangdon					
g/1901TBF/2019	Goose	MN127954	2019		China
Astv/Goose/Guangdon					
g/1901LNC/2019	Goose	MN127953	2019		China
Astv/Goose/Guangdon					
g/1812GXG/2018	Goose	MN127952	2018		China
Astv/Goose/Guangdon					
g/1811TS/2018	Goose	MN127951	2018		China
Astv/Goose/Guangdon					
g/1807LZQ/2018	Goose	MN103532	2018		China
AstV/HB02/Goose/031					
0/19	Goose	MN307119	2019		China
AstV/HB01/Goose/012					
3/19	Goose	MN307118	2019		China
AstV/HN02/Goose/111					
9/18	Goose	MN307117	2018		China
AstV/AH02/Goose/071					
5/18	Goose	MN307116	2018		China
AstV/AH01/Goose/051					
2/18	Goose	MN307115	2018		China
AstV/HN01/Goose/010					
3/18		MN307114	2018		China
AstV/HBXG/Goose/20					
19	Goose	MN894548	2019		China
AHAU5	Goose	MN428645	2018		China
AHAU4	Goose	MN428644	2018		China
AHAU3	Goose	MN428643	2018		China
GD_AHAU2	Goose	MN428642	2018		China
AHAU1	Goose	MN428641	2018		China
AstV/Goose/2018/HLJ					
01	Goose	MN175321	2018		China
GTF-07	Goose	MN068024	2018		China

GTF-04	Goose	MN068023	2018	China
XX	Goose	MN337323	2018	China
JSHA	Goose	MK125058	2016	China
AstV/Goose/CXZ/18	Goose	MH807626	2018	China
HN1G	Goose	KY807085	2014	China
AHDY	Goose	MH410610	2014	China
FLX	Goose	KY271027	2014	China
GD	Goose	MG934571	2017	China
FLX	Goose	KY271027	2014	China
HNU-CSZ2-2019	Goose	MT934439	2019	China
HNU-LYG3-2019	Goose	MT934438	2019	China
HNU-LYG2-2019	Goose	MT934437	2019	China
AAstV/Goose/CHN/20				
17/SD01	Goose	MF772821	2017	China