

Table S1: The Fusion gene reference sequences from GenBank and study sequences used in analysis

Accession No	Species	Country of origin	Isolate name	Year of collection	Genotype
AB465607	Chicken	Japan	Japan/Ishi/62	1962	I
Z12110	Chicken	Ireland	Ulster Mutant	1967	I
AY935492	Chicken	Australia	98-1249	1998	I
AY935499	Chicken	Australia	I-2vaccine	2005	I
AY935500	Chicken	Australia	I-2progenitor	2005	I
FJ600539	Mule duck	China	FJ0801	2008	I
HM063424	Water rail	China	R8/Guang-dong	2005	I
AF077761	Chicken	USA	Lasota	1946	II
AF309418		USA	B1	1947	II
AY225110		China	HB92/V4		II
EU289028	Turkey	USA	VG/GA	1987	II
EF201805		---	Mukteswar	1940	III
EF211808	Goose	China	JS/2/05/Go	1940	III
EF430159	Chicken	China	JS/7/05Ch	1940	III
EF589136	Fowl	China	Guizhou	1940	III
FJ480786	Mallard	China	NDV/Mallard/HLJ383/06	1940	III
AY741404		UK	Herts/33	1940	IV
EU293914		China	Italian	1940	IV
GU187941	Chicken	India	NDV-2//Namakkal/ Tamil Nadu	1940	IV
M24702		UK	Herts33	1940	IV
AF163440		China	F48E9		IX
AY341061	Chicken	China	LuoY		IX
FJ436302	Chicken	China	F48E8	1946	IX
FJ436304	Chicken	China	FJ01/85	1985	IX
FJ436306	Duck	China	JS/1/02	2002	IX
FJ705459	Cormorant	Canada	Cormorant/98CNN3-V1125/1998	1998	V a
FJ705460	Cormorant	Canada	Cormorant/95DC02150/1995	1995	V a
FJ705461	Cormorant	Canada	Cormorant/95DC2345/1995	1995	V a
JN872161	Cormorant	USA	Cormorant/Wisconsin/498260-2/07	1997	V a
AY288993	Chicken	Honduras	Chicken/Honduras/15/00	2000	V b
AY562987	Fowl	USA	Gamefowl/U.S.(CA)/211472/02	2002	V b
AY562990	Psittacine	USA	Largo/71	1971	V b
EF520718	Gamefowl	USA	Gamefowl/US (CA)/212676/2002	2002	V b
JN872181	Chicken	Honduras	Chicken/Honduras/44813/2000	2000	V b
JN942027	Chicken	Nicaragua	Fighting Cock/Nicaragua/95066-9/2001	2001	V b
JN942039	Amazon parrot	USA	Amazon/California/28936/1988	1988	V b
EU518683	Chicken	Mexico	Chicken/Mexico (Estado de Mexico)/465/2005	2005	V c
KJ577136	Chicken	Mexico	Chimalhuacan	1973	V c
HM117720	Chicken	Mexico	NDV-P05	2005	V c
JQ697743	Chicken	Mexico	Chicken/MX/NC02-634/2010	2010	V c
JQ697744	Chicken	Mexico	Chicken/MX/NC04-635/2010	2010	V c
JX974435	Chicken	Mexico	NDV1/10	2010	V c
KC808508	Gamefowl	Mexico	Gamefowl/Mex/616/2008	2008	V c
KC808509	Gamefowl	Mexico	Gamefowl/Mex(DF)/619/2008	2008	V c
KC808510	Scarlet macaw	Mexico	Scarlet macaw/Mex(Chiapas)/672-ZM12/2009	2009	V c
AF218134	Pheasant	Italy	IT-47	1974	Va
AF218136	Turkey	Italy	IT-51B	1972	Va
AF525370	Chicken	Germany	DE-173	1970	Va
AF525375	Chicken	Germany	DE-183	1974	Va
AF525377	Amazon	Germany	DE-190	1970	Va
AF525396		Yugoslavia	Yu(Vo)-1744	2002	Va
AY116971		Slovenija	HR-448	1979	Va
AY444496	Yellow nape parrot	USA	U.S(MA)/19120/87	1987	Va
EF065682	Chicken	USA	rAnhinga		Va

GQ288382	Cormorant	Canada	Cormorant/98 CNN3-V1125DC02150/1998	1998	Va
GQ288383	Cormorant	Canada	Cormorant/Canada/95DC02150/1995	1995	Va
GQ288387	Cormorant	USA (MN)	Cormorant/US (MN) 92-40140/1992	1992	Va
GQ288388	Cormorant	USA (CA)	Cormorant/US(CA)/92-23071/1992	1992	Va
AF402118		Bulgaria	BG-55	1975	Va
HG937573	Chicken	Uganda	NDV/chicken/Uganda/MU024/2011	2011	Vd
HG937580	Chicken	Uganda	NDV/chicken/Uganda/MU040/2011	2011	Vd
JQ217418	Chicken	Kenya	A89	2010	Vd
JQ217419	Chicken	Kenya	A48	2010	Vd
JQ217420	Chicken	Kenya	A148	2010	Vd
KY007043	Chicken	Kenya(Nairobi)	NDV/KE0576/2015	2015	Study sequence
KY007044	Chicken	Kenya(Nairobi)	NDV/KE0733/2015	2015	Study sequence
KY007045	Chicken	Kenya Makueni)	NDV/KE0679/2015	2015	Study sequence
KY007046	Chicken	Kenya (Bomet)	NDV/KE0673/2015	2015	Study sequence
KY007047	Chicken	Kenya (Kitui)	NDV/KE0601/2015	2015	Study sequence
KY007048	Chicken	Kenya (Bungoma)	NDV/KE1002/2016	2016	Study sequence
KY007049	Chicken	Kenya (Makueni)	NDV/KE0678/2015	2015	Study sequence
KY007050	Chicken	Kenya (Bungoma)	NDV/KE0697/2015	2015	Study sequence
KY007051	Chicken	Kenya (Homabay)	NDV/KE0695/2015	2015	Study sequence
KY007052	Chicken	Kenya (Homabay)	NDV/KE0687/2015	2015	Study sequence
KY007053	Chicken	Kenya (Makueni)	NDV/KE0676/2015	2015	Study sequence
KY007054	Chicken	Kenya (Busia)	NDV/KE2055/2016	2016	Study sequence
KY007055	Chicken	Kenya (Busia)	NDV/KE2054/2015	2015	Study sequence
KY007056	Chicken	Kenya (Migori)	NDV/KE0715/2015	2015	Study sequence
KY007057	Chicken	Kenya (Bungoma)	NDV/KE1004/2016	2016	Study sequence
KY007058	Chicken	Kenya (Kitengela)	NDV/KE0525/2015	2015	Study sequence
KY007059	Chicken	Kenya (Kilifi)	NDV/KE0410/2015	2015	Study sequence
KY007060	Chicken	Kenya (Machakos)	NDV/KE0647/2015	2015	Study sequence
KY007061	Chicken	Kenya (Nairobi)	NDV/KE0638/2015	2015	Study sequence
KY007062	Chicken	Kenya (Malaba)	NDV/KE0660/2015	2015	Study sequence
KY007063	Chicken	Kenya (Kitengela)	NDV/KE0523/2015	2015	Study sequence
MG988405	Chicken	Kenya (Busia)	NDV/KE1007/2016	2016	Study sequence
AY288995	Dove	Italy	Dove/Italy/2736/00	2000	VI
AY288996	Pigeon	Italy	Pigeon/Italy/1166/00	2000	VI
AY288997	Chicken	Kenya	Chicken/Kenya/139/90	1990	VI
FJ865434	Pigeon	China	S-1	2002	VI
GQ507801	Chicken	South Korea	Kr-102/89	1989	VI
JX518532	laughing Dove	Kenya	Laughing Dove/B2/Kenya/Isiolo	2012	VI
AY444497		Indonesia	Moluccan/Indonesia/904/87	1987	VII
GQ288381	Cormorant	USA (CA)	Cormorant/US(CA)/D9704285/1997	1997	VII
AF358786	Chicken	Taiwan	TW/2000	2000	VII
AF458010	Chicken	China	JS-3/00	2000	VII
GQ245818	Ostrich	China	YZ-22-07-Os	2007	VII
GU227738	Dove	Serbia	NDV/Serbia/749/2007	2007	VII
AY734534	Chicken	Argentina	Trenque Lauquen	1970	VIII
FJ751918	Chicken	China	QH1	1979	VIII
FJ751919	Chicken	China	QH4	1985	VIII
FJ705464	Mallard	USA	Mallard/US(OH)/04-411/2004	2004	X
FJ705467	Mallard	USA	Mallard/US(MN)/MN00-32/2000	2000	X
FJ705468	Mottled duck	USA	Mottled duck/US(TX)/TX01-130/2001	2001	X
HQ266602	Chicken	Madagascar	MG/725/08	2008	XI
HQ266603	Chicken	Madagascar	MG/1992/08	2008	XI
HQ266604	Chicken	Madagascar	MG/Meola/08	2008	XI
JN627504	goose	China	Goose/China-GD/12/2011	2011	XII
JN627506	Goose	China	Goose/China-GD/20/2011	2011	XII
JN627507	goose	China	Goose/China-GD/1003/2010	2010	XII
JN627508	goose	China	Goose/China-GD/450/2011	2011	XII
JN800306	Chicken	Peru	Poultry/Peru/1918-03/2008	2008	XII
AY865652	<i>Sterna albifrons</i>	Russia	Sterna/Astr/2755/2001	2001	XIII
GU182323	Chicken	Pakistan	SPVC/Karachi/NDV/43/2008	2008	XIII
GU182331	Chicken	Pakistan	SPVC/Karachi/NDV/33/2007	2007	XIII

JN682190	Chicken	Pakistan	Chicken/CP/Islamabad2/2010	2010	XIII
HF969214	Chicken	Nigeria	Chicken/Nigeria/NIE10-333/2011	2011	XIV
JX119193	Chicken	Dominican Republic	DominicanRepublic//499-31/2008	2008	XVI
JX186997	Chicken	Dominican Republic	Dominican/Republic/867/2008	2008	XVI
JX915242	Chicken	Dominican Republic	DominicanRepublic/28138-4/1986	1986	XVI
JX915243	Chicken	Mexico	Mexico/Queretaro/452/1947	1947	XVI
HF969184	Chicken	Ivory Coast	CIV08-103	2007	XVII
FJ772446		Nigeria	Avian/913-1/Nigeria/2006	2006	XVII
FJ772449		Nigeria	Avian/913-33/Nigeria/2006	2006	XVII
FJ772455		Mauritania	Avian/1532/14/Mauritania/2006	2006	XVIII
FJ772466	Chicken	IvoryCoast	Chicken/2601/Ivory Coast/2008	2008	XVIII
HF969127	Chicken	Ivory Coast	CIV08-069	2007	XVIII
EF612277		USA	AK/196	1998	Class I

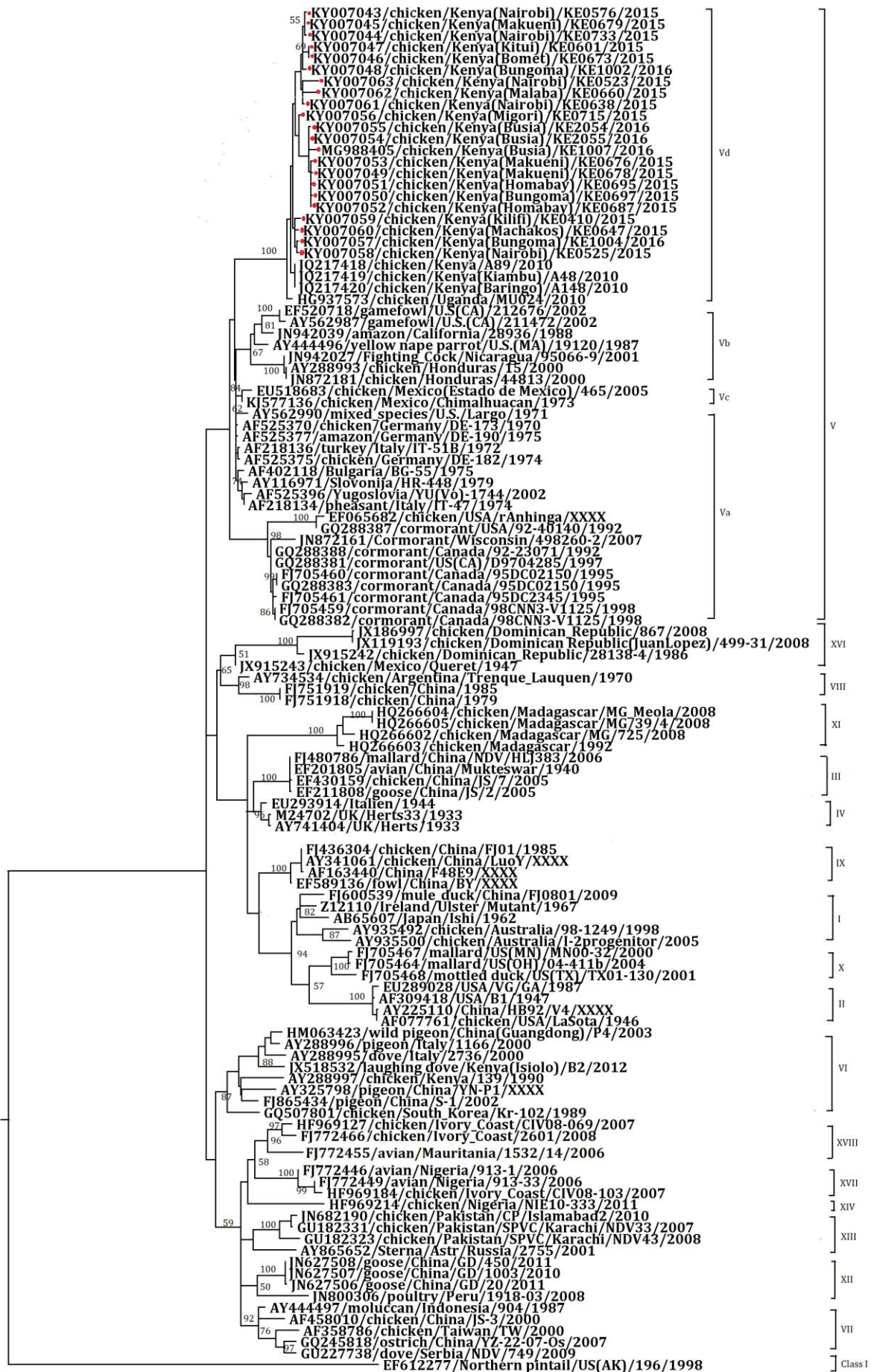


Figure S2: Phylogenetic tree of nucleotide sequence of the partial Fusion (F) gene (374bp) of Newcastle disease virus (NDV) in the study (● marked) and reference sequences for NDV from GenBank including representatives of genotype V from various parts of the world (including Europe). The evolutionary history was inferred by using the Maximum Likelihood method based on the Kimura-2 parameter. The analysis involved 119 nucleotide sequences. The tree is rooted. The analyses were conducted in MEGA