

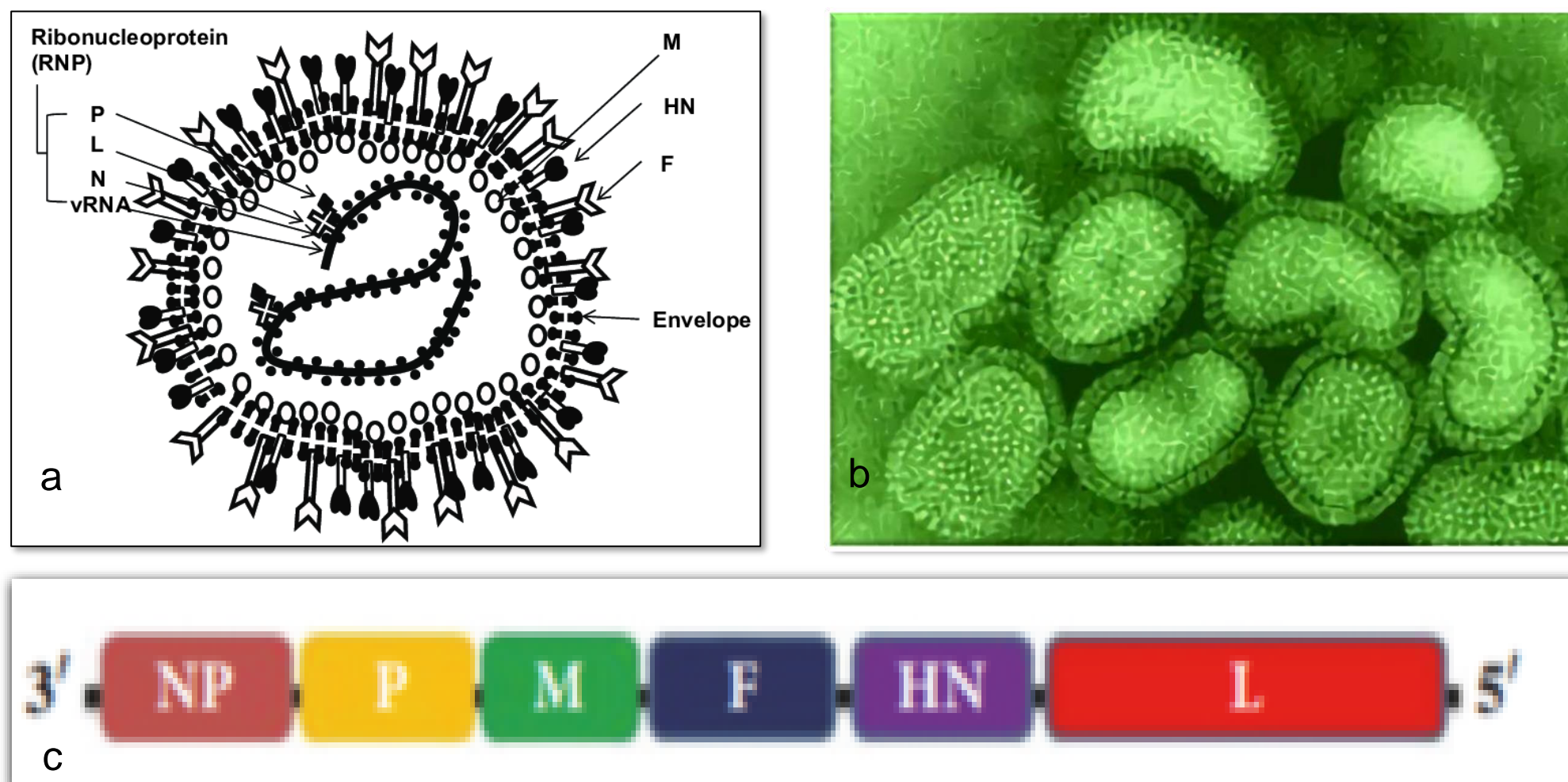
Isolation and Molecular Characterization of Class II novel genotype of Newcastle disease virus from field outbreaks in Mizoram, NER, India

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INTRODUCTION & AIM

❖ **Economic significance:** Poultry is one of the major segments that contributed significantly to the livestock revolution and food production. Poultry encompasses domesticated avian species that are being raised for eggs and meat.



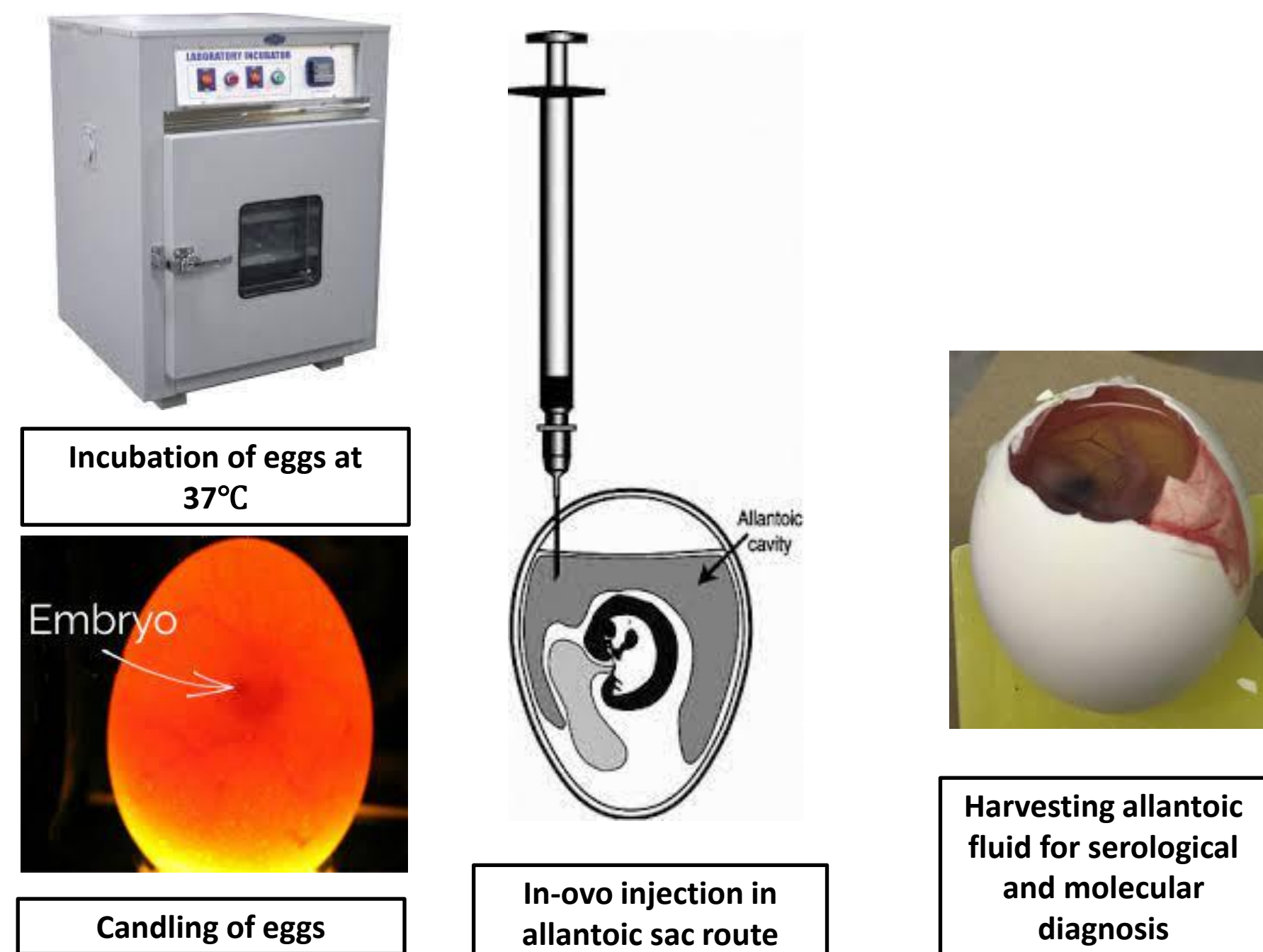
Catroxo et al. (2011)

a. Virions are roughly spherical; 150 nm or more in diameter and filamentous. b. Electron microscopic structure of APMV1. c. Genomic structure of APMV1.

❖ **Aim of the experiment:** In the present study the NDV outbreaks were recorded in both vaccinated and unvaccinated flocks in three different farms of Mizoram and the virus was characterized based on full length F gene and our findings confirmed the emergence of novel genotype XXII of class II NDV circulating in Mizoram, NER.

METHOD

❖ **Isolation of NDV in 9-10 day old embryonated egg (OIE,2021)**

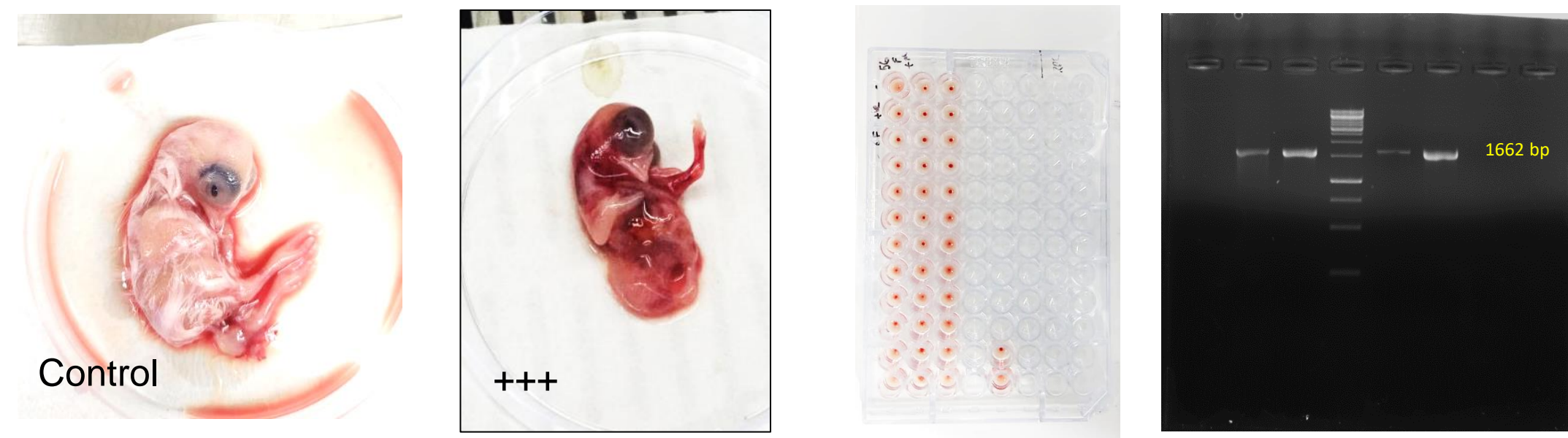


❖ **Molecular detection of F gene:** The thermal profile included one cycle of initial denaturation temperature at 94°C for 5 min and 30 cycles of denaturation at 94°C for 1 min followed by annealing at 52°C for 1 min followed by extension of 72°C for 90 seconds followed by final extension of 72°C for 5 mins. Following primers were used for the experiment:

Virus	I.D. No.	Primer Sequence	Length	Region	Reference
NDV	NDF1	5'-ATGGCTCCAAACCTCTAC-3'	1662 bp	F gene	Qin.et.al., (2008)
	NDFR1	3'-TTGTAGTGGCTCATC-5'			

❖ **Molecular characterization of Class II NDV:** Sanger dideoxynucleotide sequencing & construction of phylogenetic tree using MEGA XI.

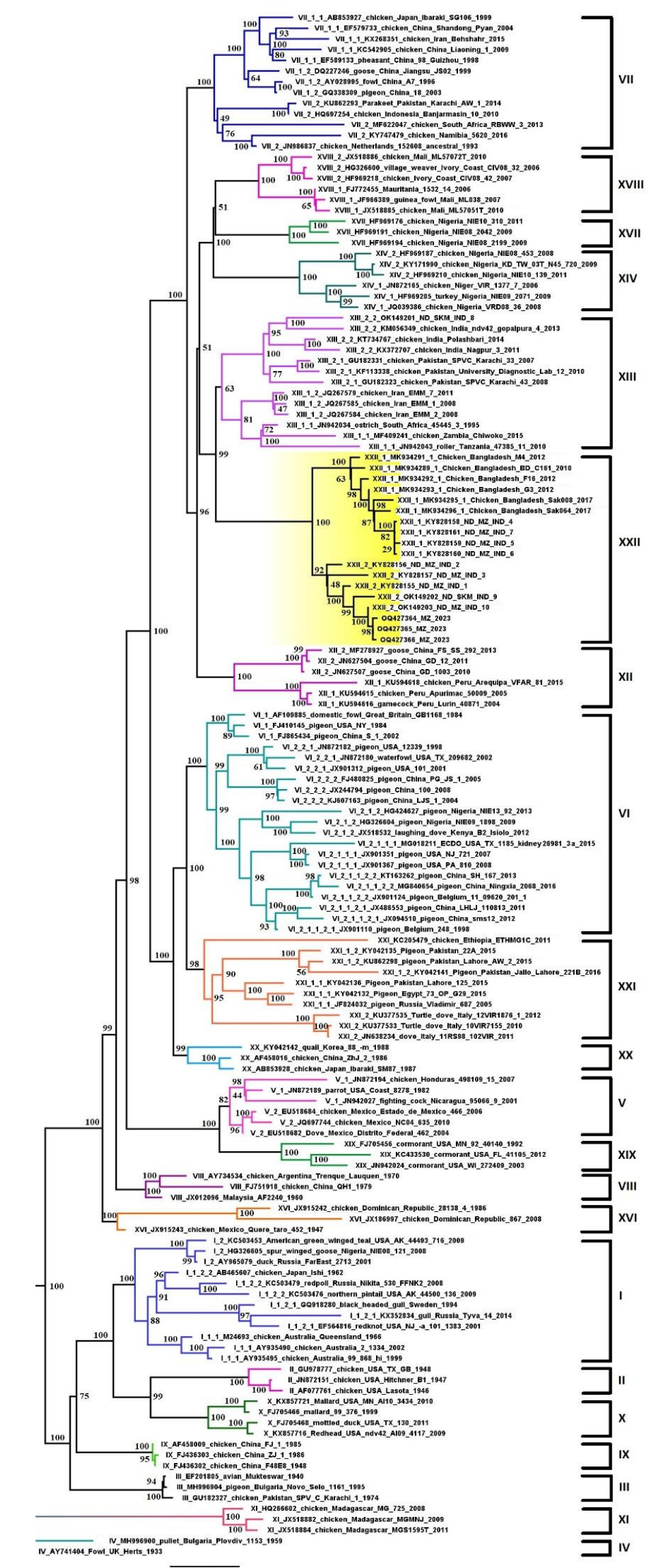
RESULTS & DISCUSSION



Serological & Molecular detection of NDV by HA-HI & RT-PCR (F gene: 1662 bp)

Strains	Fusion protein Cleavage site					
	112	113	114	115	116	117
B1	G	R	Q	G	R	L
LaSota
Mukteshwar	R	.	.	R	.	F
ND MZ IND 1	R	.	.	K	.	F
ND MZ IND 2	R	.	.	K	.	F
ND MZ IND 3	R	.	.	K	.	F
ND MZ IND 4	R	.	.	K	.	F
ND MZ IND 5	R	.	.	K	.	F
ND MZ IND 6	R	.	.	K	.	F
ND MZ IND 7	R	.	.	K	.	F
ND SKM IND 8	R	.	R	K	.	F
ND SKM IND 9	R	.	.	K	.	F
ND SKM IND 10	R	.	.	K	.	F
OQ427364	R	.	.	K	.	F
OQ427365	R	.	.	K	.	F
OQ427366	R	.	.	K	.	F

Deduced amino acid sequences & Phylogenetic tree showing emergence of highly virulent novel genotype XXII of class II NDV circulating in Mizoram, NER



CONCLUSION

Newcastle disease has emerged into NER from the neighbouring countries from the past few years. The present study revealed the widespread circulation of this disease in both backyard and commercial sectors of farming leading to incurring economic losses to the poultry industry. Therefore, rapid isolation and identification of the Newcastle disease virus was of great importance in the present study in order to create awareness regarding the virus circulating in different parts of Mizoram. Further on molecular characterization of these isolates under present study it was revealed that they belonged to the newly identified genotype (XXII).

FUTURE WORK / REFERENCES

- Catroxo, M.H.B., Petrella, S., Curi, N.A. and Melo, N.A. (2011). Research of viral agent in free-living pigeon faeces (*Columba livia*) in the City of Sao Paulo, SP, Brazil, for transmission electron microscopy. *Int. J. Morphol.*, **29(2)**: 628-635
- Dimitrov, K. M., Abolnik, C., Afonso, C. L., Albina, E., Bahl, J., Berg, M. and Wong, F. Y. (2019). Updated unified phylogenetic classification system and revised nomenclature for Newcastle disease virus. *Infect. Genet. Evol.*, **74**: 103917.