Since its first records in the 1950s in West Africa, Newcastle disease virus (NDV) has been submitted to several surveillance campaigns that have provided large datasets of samples.

In this study, we analysed 137 complete fusion gene sequences of NDV obtained from poultry sampled between 2006 and 2011 from nine West African countries: Nigeria (n=94), Cameroon (n=6), Ivory Coast (n=7), Mali (n=7), Burkina Faso (n=2), Mauritania (n=1), Niger (n=6), Benin (n=2), and Togo (n=2).

In order to understand the transmission dynamics of NDV in Nigeria and the neighbouring countries, we conducted phylogenetic analyses by considering the temporal and the spatial evolution of the virus: (i) phylodynamic analyses at a regional scale to highlight the evolution of virus mutations over time that may reflect viral adaptations; and (ii) phylogeographic methods to infer the geographical history of NDV genotypes as well as to estimate the rate of virus transmission and spatial spread in the region.

By combining spatial and genetic analyses and using Bayesian stochastic search variable selection (BSSVS) procedure, we identified frequently invoked rates to explain the diffusion process. We revealed the pathways of introduction and transmission of NDV from neighboring countries to Nigeria. We also analysed the Nigerian diffusion pathways in relation to national commercial poultry networks.

By implementing molecular clocking, we estimated the date of virus diffusion and showed longstanding presence of NDV in West Africa, revealing how virus diffusion may enable endemic maintenance.
We are a biotech company fully aligned with the concept of “one world one health”. Specifically we cover those processes that contribute to improve ANIMAL HEALTH and FOOD SAFETY, developing diagnostic tools useful in (1) the epidemiological control of animal infectious diseases (2) improve the animal welfare and (3) ensure quality food.

www.ingenasa.com
Committed to livestock productivity

Passionate about people

Merial, a leading global provider of animal health solutions
# Index

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>SPONSORS</td>
</tr>
<tr>
<td>6</td>
<td>WELCOME</td>
</tr>
<tr>
<td>7</td>
<td>ACKNOWLEDGEMENTS</td>
</tr>
<tr>
<td>8</td>
<td>CONGRESS COMMITTEES</td>
</tr>
<tr>
<td>9</td>
<td>KEYNOTE SPEAKERS</td>
</tr>
<tr>
<td>19</td>
<td>KEYNOTES LECTURES</td>
</tr>
<tr>
<td>20</td>
<td>PROGRAMME</td>
</tr>
<tr>
<td>28</td>
<td>YOUNG EPIZONE PROGRAME</td>
</tr>
<tr>
<td>29</td>
<td>PARALLEL SESSIONS: ORAL PRESENTATIONS (ABSTRACTS)</td>
</tr>
<tr>
<td>89</td>
<td>POSTER PRESENTATIONS (ABSTRACTS)</td>
</tr>
<tr>
<td>111</td>
<td>POSTERS</td>
</tr>
<tr>
<td>165</td>
<td>LAST MINUTE POSTERS</td>
</tr>
<tr>
<td>167</td>
<td>LIST OF PARTICIPANTS</td>
</tr>
<tr>
<td>173</td>
<td>LAST MINUTE MODIFICATIONS</td>
</tr>
</tbody>
</table>
Sponsors

**GOLD SPONSOR**

**INGENASA**
C/ Hermanos García Noblejas, 39
28037 Madrid, Spain
Phone.: +34 91 368 0501
ingenasa@ingenasa.com

**SILVER SPONSOR**

**MERAL**
2, Avenue Pon Pasteur
69007 Lyon
France
amanda.evans@merial.com

**SILVER SPONSOR**

**ZOETIS MANUFACTURING & RESEARCH SPAIN, S.L.**
Carretera Camprodon s/n Finca “La Riba”
17813 Vall de Bianya, Girona, Spain
www.zoetis.es

**OTHER SPONSORS**

**IDVET**
310, rue Louis Pasteur
34790 Grabels, France
info@id-vet.com

**ROCHE**
Avda. de la Generalitat, 171-173
08174 Sant Cugat del Vallès
Barcelona, Spain
luis.brandi@roche.com

**LABORATORIOS HIPRA, S.A**
Avda. la Selva, 135
17170 Amer, Girona, Spain
Phone.: +34 972 43 06 60
hipra@hipra.com / www.hipra.com

**CZ VETERINARIA**
Polígono La Relva, Toméiros s/n
36400 Porríño, Pontevedra, Spain
Phone.: +34 986 33 04 00
www.czveterinaria.com

**YOUNG EPIZONE SPONSORS**

**CULTEK, S.L.U**
Avda. Cardenal Herrera Orià, 63, 4ª planta
28034 Madrid, Spain
cultek@cultek.com
Welcome 10th Annual Meeting EPIZONE “Going Viral”

It is a great honour and a privilege for me to give you all our warmest welcome to the Xth Annual Meeting of EPIZONE, the first to be celebrated in Spain. INIA-CISA, as the host institution, has been fully committed on this challenge from the beginning, and we do hope that the final result will be satisfactory for participants, sponsors and organizers. We wish to thank specially to them, as this event could not be possible without any of these essential parts. The financial support from sponsors, the availability and contributions from keynote speakers, the high scientific level of oral and poster presentations from participants and, at the end, curious, active and interested assistants, will contribute to the success of the meeting. From the organizing committee I want also to thank the EPIZONE secretariat and coordinator for their continuous help and implication in the effort. Finally, my gratitude to the people at the local and international scientific and organizing committees that have been working together very hard to yield a balanced, wide-scoped and intense (maybe too intense?) programme. Special thanks to Jovita Fernandez Piñero, who has been in charge of many tasks, and has fulfilled a brilliant labour. And will not forget about the enthusiastic Young Epizone people; thank you for your work and for organizing such a well-designed session.

Under the general title of “Going Viral”, and from a One Health perspective, we have outlined three concentric circles defining the main topics:

**Topic I:** Animal Health in a changing World, dealing with global threats for animal health.

**Topic II:** Threats at the European border, paying attention to diseases in the neighbouring areas.

**Topic III:** Current challenges inside Europe, where the main diseases affecting the European countries will be discussed.

As in previous EPIZONE meetings, diagnostics, intervention strategies, epidemiology and surveillance, risk analysis and some other aspects will be approached by recognized experts in specific sessions. Many diseases which are familiar to us will receive attention, from Foot and Mouth Disease to West Nile Virus Disease or the more recent episodes by Lumpy Skin Disease, Pest des Petits Ruminants and some others. African Swine Fever and Bluetongue have been the most “popular” diseases among contributors, this revealing their current relevance.

I hope that the efforts of contributors, sponsors, participants and organizers will provide an opportunity for the “epizootic community” to work together, to plan new initiatives, to interact and to share a good time in Madrid.

Victor Briones
Acknowledgements

We are very grateful to the following companies for sponsoring the 10th Annual EPIZONE meeting:

- **Ingenasa** gold sponsor
  www.ingenasa.eu
- **Merial** silver sponsor
  www.merial.com
- **Zoetis** silver sponsor
  www.zoetis.com
- **Idvet**
  www.id-vet.com
- **Roche**
  www.roche.com
- **Hipra**
  www.hipra.com
- **CZ Veterinaria**
  www.czveterinaria.com
- **Cultek**
  www.cultek.com

We are also grateful to the following Spanish Organizations for their special support:

**National Institute for the Agricultural and food Research and Technology (INIA)**

**Spanish Technology Platform for Animal Health (Vet+i)**
Congress Committees

Local scientific and organizing committees (INIA-CISA):

- Victor Briones, Director, head of both local committees
- Jovita Fernández-Pinero
- Maria Luisa Arias
- Miguel Ángel Jiménez-Clavero
- Ana de la Torre
- Fernando Esperon
- Javier Ortego
- Noemí Sevilla
- Alejandro Brun

International scientific committee:

- Victor Briones (INIA-CISA, Spain)
- Stephan Zientara (ANSES, France)
- Ana Moreno (IZSLER, Italy)
- Martin Beer (FLI, Germany)
- Linda Dixon (Pirbright, UK)
- Anette Botner (DTU, Denmark)
- Thierry Van der Berg (CODA-CERVA, Belgium)
- José Manuel Sánchez-Vizcaíno (UCM, Spain)
- Wim Van der Poel (CVI-WUR, The Netherlands)

EPIZONE organizing committee:

- Manon Swanenburg
- Margriet Vedder
- Wim Van der Poel
EPIZONE European Research Group (ERG) is the international network of veterinary research institutes working on epizootic animal diseases including those which may have zoonotic potential. It plays a key role in research on prevention, detection and control of animal diseases and zoonoses in order to reduce the risks and harm to animal health and the risks to public health in the EU and beyond.

Contact EPIZONE:
Phone: +31 (0) 320 238 883
E-mail: epizone.cvi@wur.nl
www.epizone-eu.net

Host Institution:
Centro de Investigación en Sanidad Animal
www.inia.es