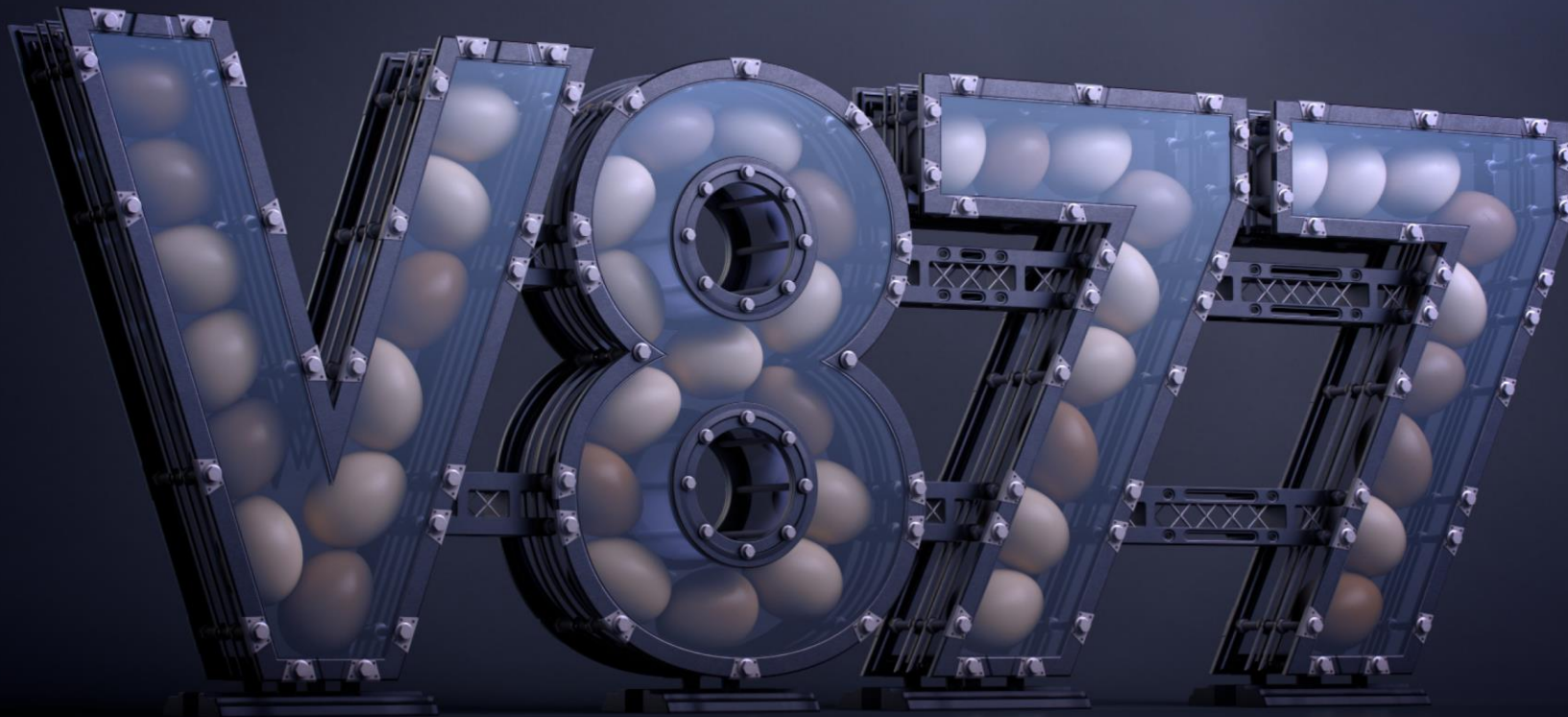


# SOLUÇÕES ZOETIS PARA O CONTROLE DA DOENÇA DE GUMBORO



Poultac  
**MAGNIPLEX**

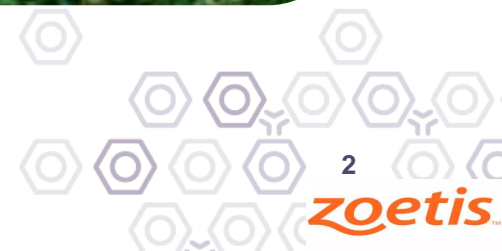
PREVENÇÃO CONTRA GUMBORO

Gleidson Salles  
Médico Veterinário Msc  
Serviços Técnicos *zoetis*

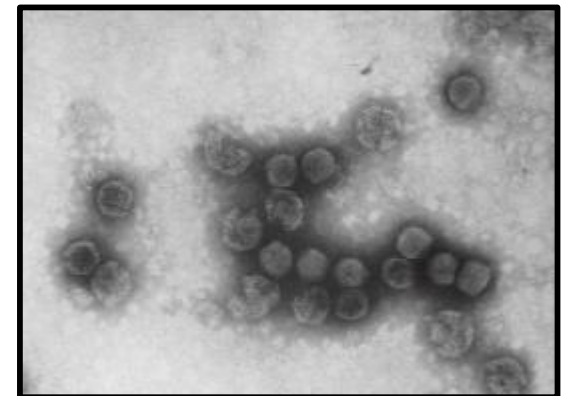
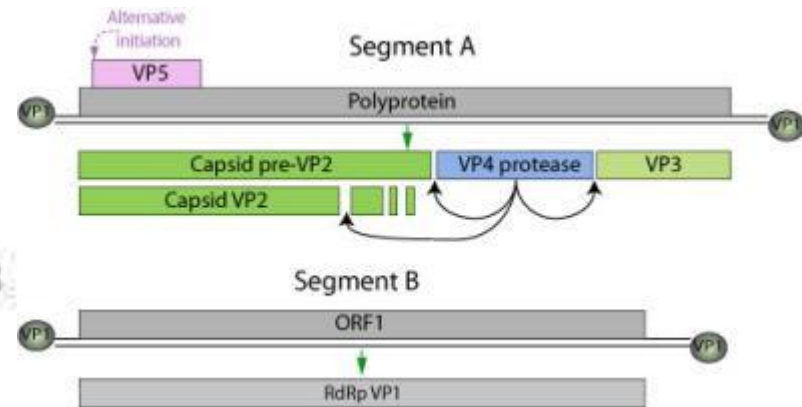
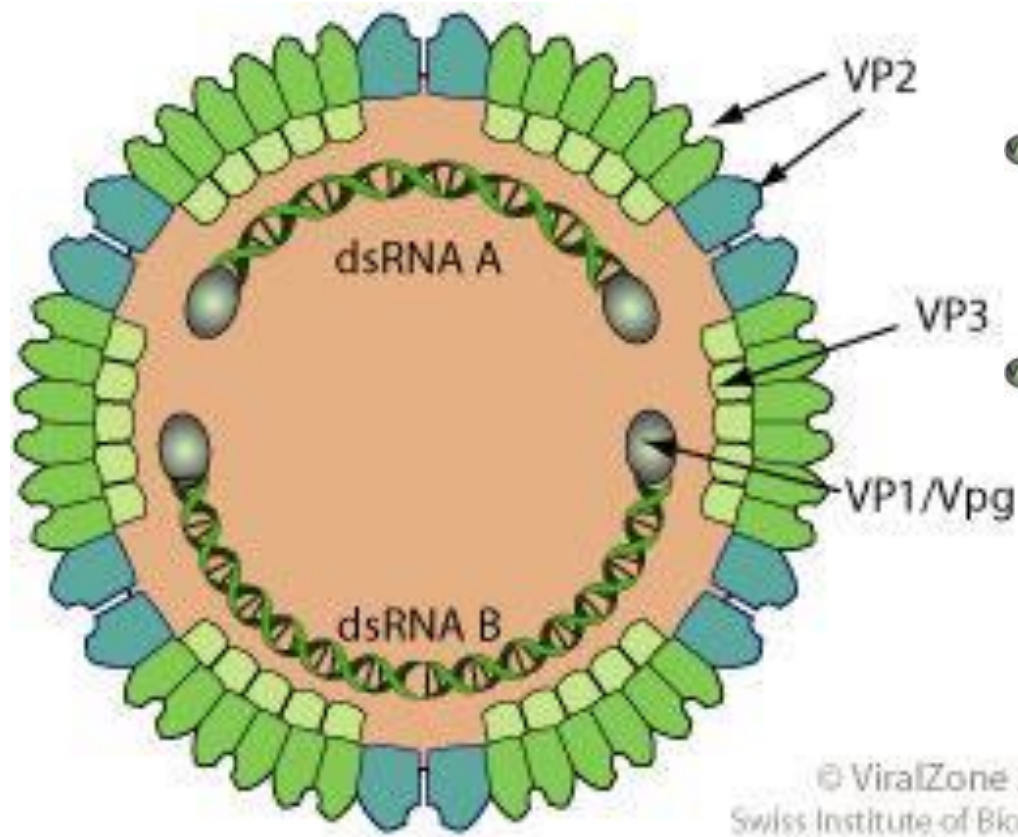
# PERSPECTIVA HISTÓRICA



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# ESTRUTURA DO IBDV



Müller H, Mundt E, Eterradossi N, Islam R.  
Avian Pathology 2012; 41(2):133-139.



# CLASSIFICAÇÃO FILOGENÉTICA

IBDV

Clássico

Variante

Vacinas

vvIBDV

**Variantes  
Imunossupressoras**

Van Den Berg TP, Eterradossi N, Toquin D. *et al.* Revue Scientifique et Technique, 2000; 19:509-543





# Estirpes altamente virulentas (clássico, G11)

## Estirpes imunodepressoras (variante, G15)





# RESULTADOS E DISCUSSÃO





## MOLECULAR EPIDEMIOLOGICAL STUDY OF IBD VIRUS IN BRAZILIAN POULTRY FARMS UNDER DIFFERENT VACCINATION PROGRAMS

EC Muniz<sup>1</sup>, R Verdi<sup>1</sup>, DT Ito<sup>1</sup>, D Kuchpel<sup>1</sup>, MS Resende<sup>1</sup>, JCO Mattos<sup>1</sup>, IL Santos<sup>1</sup>, TMC Barbosa<sup>2</sup>

<sup>1</sup> Zoesis Indústria de Produtos Veterinários Ltda – São Paulo/Brasil

<sup>2</sup> Centro de Análises e Pesquisa Veterinária – CAPEV/Unicamp

### ABSTRACT

Live-virus attenuated vaccines are used globally to control infectious bursal disease (IBD) in bird flocks (3). One of the major concerns with this type of vaccination is the susceptibility of vaccine agents to maternal antibodies and their potential ability to induce immunosuppression in vaccinated birds (1, 2). This generates a continuous search for new technologies in bird immunization.

Immune complex and recombinant vaccines have been used successfully in recent decades.

The objective of this research was to conduct an epidemiological study of IBD virus in birds subjected to different vaccine schedules in Brazil.

### STUDY DESIGN

Two hundred and fifty-one (251) commercial bird flocks were sampled in different regions of Brazil (south, southeast, midwest and northeast) over a 4-year period (2011 to 2014) to detect the presence of the IBD virus. Recent outbreaks, high mortality rates with clinical presence of IBD, inconsistent performance, or other signs of immunosuppression were the criteria used to select the sampled flocks. The vaccination schedule was recorded when samples were collected, and classified into three categories: recombinant vaccine, immune-complex vaccine, or traditional live vaccine administered via drinking water. All samples were collected from commercial birds aged from 25 to 35-day-old. At least 5 flocks of Fabricius were selected per flock and an imprint of the bursal epithelium was taken using an FTM card (1). The nucleotides and the amino acid sequence predicted from the VP2 protein were used to characterize the virus and group classify it as: vaccine strain, very virulent strain (vvIBDV), or variant strain (Table 2) (2). All samples were analyzed and characterized by the Zoesis diagnostic laboratory in North Carolina, USA.

### RESULTS

Tables 1 and 2 show the number of samples that tested positive for IBD virus in flocks under different vaccination schedules. They also show the results of the isolation and characterization of these positive samples. Eighty-one (81) positive samples (approximately 29%) were recovered in these 251 sampled flocks. Out of all of the positive samples, approximately 49% were classified as field strains (vvIBDV and variants). The other half were compatible with the genotype of vaccines used in Brazil. The high percentage of samples that tested positive for the field virus is related to the selection criteria used, namely they were obtained from flocks that were suspected to have clinical or subclinical IBD disease. Furthermore, the high percentage of field virus shows that, even when birds receive attenuated live-virus, immune-complex, or recombinant vaccines, there is a dynamic scenario in which the field virus strains tend to evolve and bypass the immune barrier.

TABLE 2 - ISOLATION OF IBD VIRUS IN BIRDS SUBJECTED TO DIFFERENT VACCINATION SCHEDULES

Vaccine schedule	Total	Negative	Positive
Recombinant	78	59	20
Immune complex	104	77	28
Traditional	67	43	24
Total	251	179 (71%)	81 (32%)

TABLE 1 - MOLECULAR CHARACTERIZATION OF 81 POSITIVE SAMPLES CARRIED OUT BY VP2 SEQUENCING

Vaccine schedule	Vaccine	vvIBDV	Variant
Recombinant	6	12	10
Immune complex	24	0	6
Traditional	11	7	6
Total	41 (51%)	19 (23%)	21 (26%)

### DISCUSSION

A high frequency of positive samples was observed in this research conducted on flocks receiving recombinant vaccines. This shows the field virus's ability to occupy space in the bursa of Fabricius, and therefore in the environment. Outstanding efficacy of immune complex vaccines was also demonstrated against very virulent strains of IBD virus.

The molecular profile of the IBD virus strains currently circulating in Brazil depends on the vaccination schedules which are used.

### REFERENCES

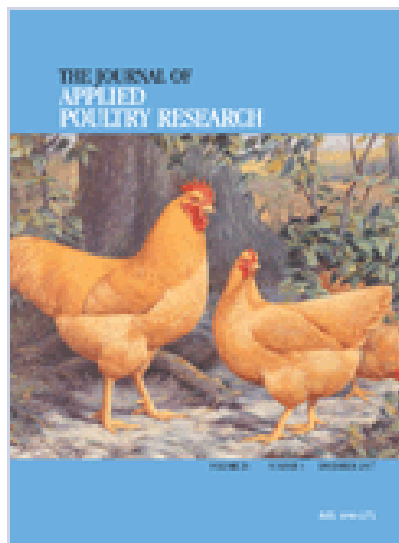
1. Lubert J. *IBD*. *Avian Diseases* 2012; 56: 217-27.
2. Cookson K, Hargrett-Bean N, Cookson K, et al. *IBD*. *Avian Diseases* 2012; 56: 218-27.
3. Miller K, Bostrom B, Cookson K. *Avian Diseases* 2012; 56: 219-23.

# Molecular epidemiologic survey of infectious bursal disease viruses in broiler farms raised under different vaccination programs

E C Muniz ✉, R Verdi, D J Jackwood, D Kuchpel, M S Resende, J C Q Mattos, K Cookson

*The Journal of Applied Poultry Research*, pfx043, <https://doi.org/10.3382/japr/pfx043>

Published: 03 November 2017



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zoetis



# MATERIAL E MÉTODOS




U.S. DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE VETERINARY SERVICES WASHINGTON, D.C. 20250 <b>UNITED STATES VETERINARY PERMIT FOR IMPORTATION AND TRANSPORTATION OF CONTROLLED MATERIALS AND ORGANISMS AND VECTORS</b>		PERMIT NUMBER 112901 Research
NAME AND ADDRESS OF SHIPPER(S) Various shippers outside the UNITED STATES	DATE ISSUED 05/12/2015	DATE EXPIRES 05/12/2016
NAME AND ADDRESS OF PERMITTEE INCLUDING ZIP CODE AND TELEPHONE NUMBER Elizabeth Turpin Zoetis 1040 Swabia Court Durham, North Carolina 27703 919-314-2690	CC- Service Center, NC (Raleigh, NC)	DATE REPORTS OF ARRIVAL AS APPLICABLE
AS REQUESTED IN YOUR APPLICATION YOU ARE AUTHORIZED TO IMPORT OR TRANSPORT THE FOLLOWING MATERIALS: Biological specimens and tissue samples (avian origin)		MODE OF TRANSPORTATION ANY

**RESTRICTIONS AND PRECAUTIONS FOR TRANSPORTING AND HANDLING MATERIALS AND ALL DERIVATIVES**

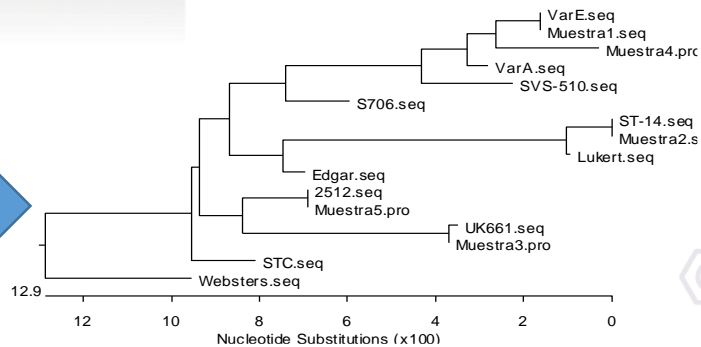
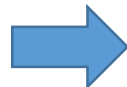
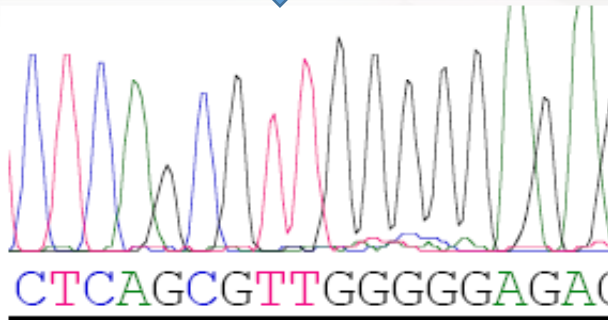
THIS PERMIT IS ISSUED UNDER AUTHORITY CONTAINED IN 9 CFR CHAPTER I, PARTS 94.6 AND 122. THE AUTHORIZED MATERIALS OR THEIR DERIVATIVES SHALL BE USED ONLY IN ACCORDANCE WITH THE RESTRICTIONS AND PRECAUTIONS SPECIFIED BELOW. ALTERNATIONS OF RESTRICTIONS CAN BE MADE ONLY WHEN AUTHORIZED BY USDA, APHIS, VS.

- o Adequate safety precautions shall be maintained during shipment and handling to prevent dissemination of disease.

o \*\*\* THIS PERMIT IS INVALID WITHOUT PERMITTEE'S SIGNATURE \*\*\*. "I, Elizabeth Turpin, certify that this material will be used in accordance with all restrictions and precautions as are specified in this permit.  
 \*\*\*  
 o \*\*\* signed:  . . . \*\*\*

o \*\*\* Each shipment shall be accompanied by an ORIGINAL signed document from the producer/manufacture confirming that the exported material: 1) was derived from birds, 2) was subjected to FTA filter paper (cards), 3) was paraffin embedded or formalin fixed, and 4) was not exposed to or commingled with any other animal origin material. [This certification must CLEARLY correspond to the shipment by means of an invoice number or shipping marks or lot number or other identification method. An English translation must be provided.]

o This permit DOES NOT authorize direct or indirect exposure of or inoculation into laboratory and domestic livestock, including poultry, cattle, sheep, swine, and/or horses. Work shall be limited to IN VITRO uses only.



UK661, Lukert, DEL, 28-1, STC, 2512, V877, Brasil 1990

GenBank  
<http://www.ncbi.nlm.nih.gov/genbank/index.html>

Hernández M, Tomás G, Marandino A, *et al.* Avian Pathology 2015; 44(3): 212-221.





# RESULTADO POR REGIÕES GEOGRÁFICAS

Tabela 1. Resultados das análises de IBDV em diferentes regiões do Brasil.

Região Geográfica	Total de amostras	Total Amostras		Amostras Positivas		
		Negativo	Positivo	Vacina Amostra Clássica	vvIBDV Amostra Clássica	Amostra Variante
Sul (S)	158	103 (65%)	55 (35%)	26	13	16
Sudeste (SE)	46	34 (74%)	12 (26%)	7	2	3
Centroeste (ME)	12	7 (58%)	5 (42%)	4	1	-
Nordeste (NE)	35	26 (74%)	9 (26%)	4	3	2
Total	251	170 (68%)	81 (32%)	41	19	21

Silva FMF, Vidigal PMP, Myrrha LW, Fietto JLR, Silva Jr A, Almeida MR.

Infection Genetics and Evolution 2013; 13:18-26



# RESULTADO POR ESTRATÉGIA DE VACINAÇÃO

Tabela 2. Resultados da análise de IBDV de acordo com o programa vacinal.

Estratégia de vacinação	Total de Amostras	Total de amostras		Amostras Positivas		
		Negativo	Positivo	Vacina Amostra Clássica	vvIBDV Amostra Clássica	Amostra Variante
Vacina vetorizada	78	50 (64%)	28 (36%)	6	12	10
Imunocomplexo	106	77 (73%)	29 (27%)	24	-	5
Conventional	67	43(64%)	24(36%)	11	7	6
<b>Total</b>	<b>251</b>	<b>170 (68%)</b>	<b>81(32%)</b>	<b>41</b>	<b>19</b>	<b>21</b>



# CONCLUSÕES

81/251 (41 vacinas, 19 vvIBDV e 21 variantes)

Não houve diferença significativa de positividade entre as regiões

Elevada taxa de recuperação vírus de campo em lotes com programa de vacina recombinante em uso

Lotes com vacinas do tipo imuno-complexo apresentaram a taxa mais elevada de recuperação da cepa vacinal





# PROGRAMAS VACINAIS

# POSICIONAMIENTO

POSTURA COMERCIAL



MATRIZES



FRANGOS DE CORTE



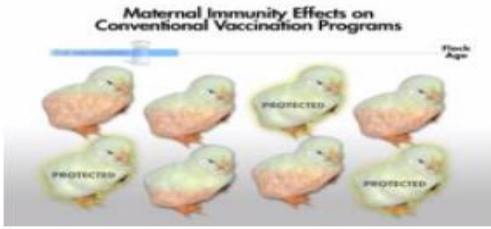
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# The working mechanism of an immune complex vaccine that protects chickens against infectious bursal disease



S. H. M. JEURISSEN,\* E. M. JANSE,\* P. R. LEHRBACH,† E. E. HADDAD,‡ A. AVAKIAN‡ & C. E. WHITFILL‡  
 \*ID-DLO, Department of Immunology, Lelystad, The Netherlands, †Fort Dodge Australia Pty Limited, Castle Hill, NSW, Australia, and ‡Embrex Inc., Research Triangle Park, NC, USA



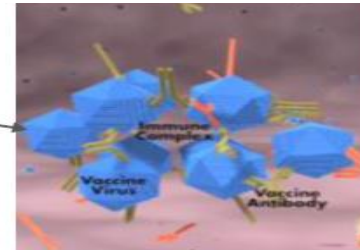
1. Funciona mesmo com Ac maternos; diferente da vacinação tradicional



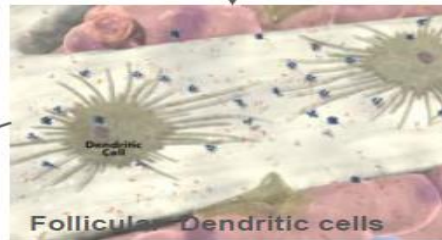
2. Uma dose *in ovo* ou no incubatório; fácil de usar



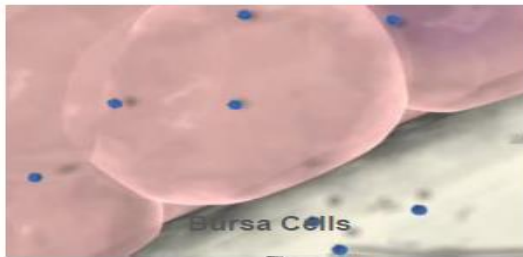
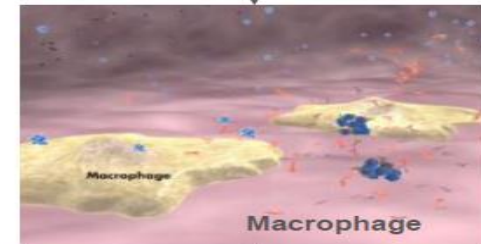
3. Administrado *In ovo*



4. O complexo

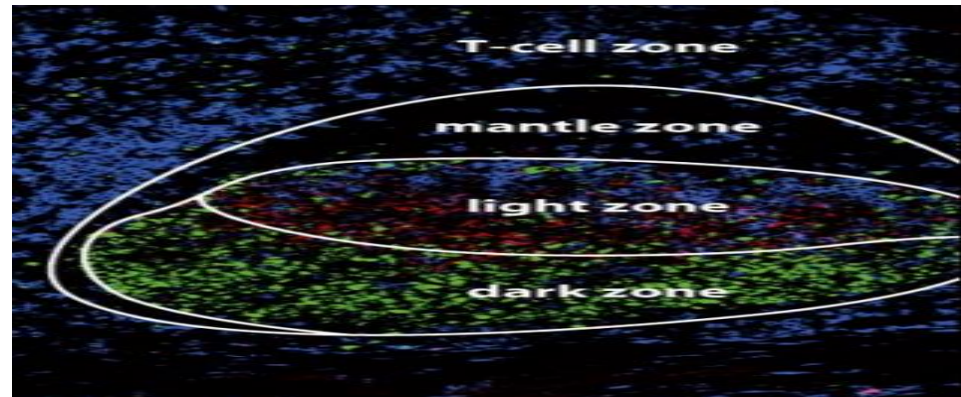
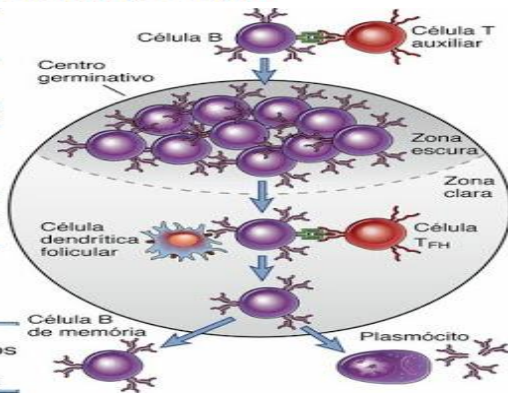


5. COMO o vírus sobrevive durante altos níveis de imunidade materna



6. COMO a vacina induz proteção

- Ativação de célula B e migração para o centro germinativo
- ↓
- Proliferação de célula B
- ↓
- Mutação somática e maturação de afinidade; troca de isotipo
- ↓
- Saída de células secretoras de anticorpos de alta afinidade e células B de memória





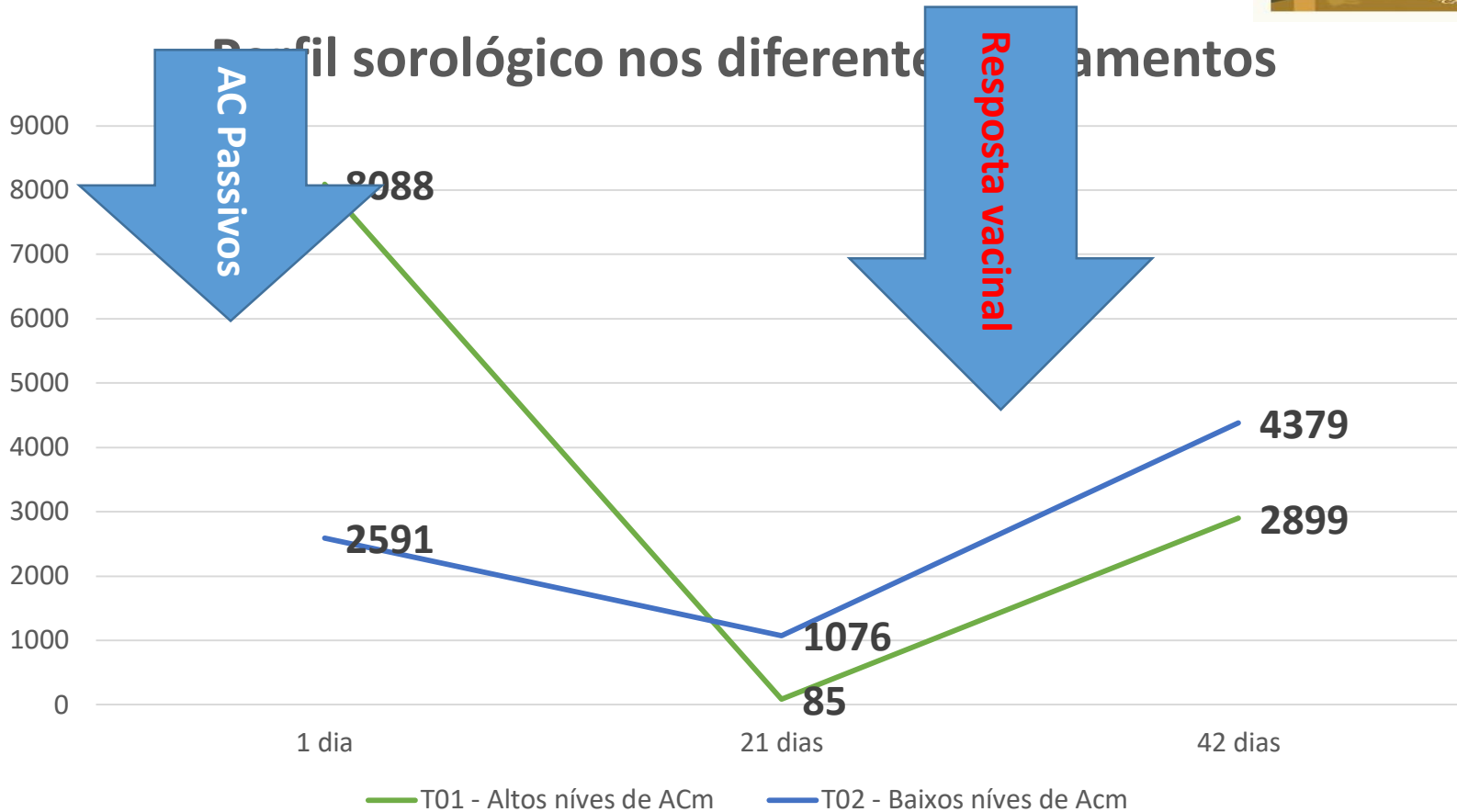
# HISTOPATHOLOGY AND SEROLOGY REACTION TO AN IMMUNE COMPLEX INFECTIOUS BURSAL DISEASE VACCINE (V877 STRAIN) IN SPF AND COMMERCIAL BIRDS

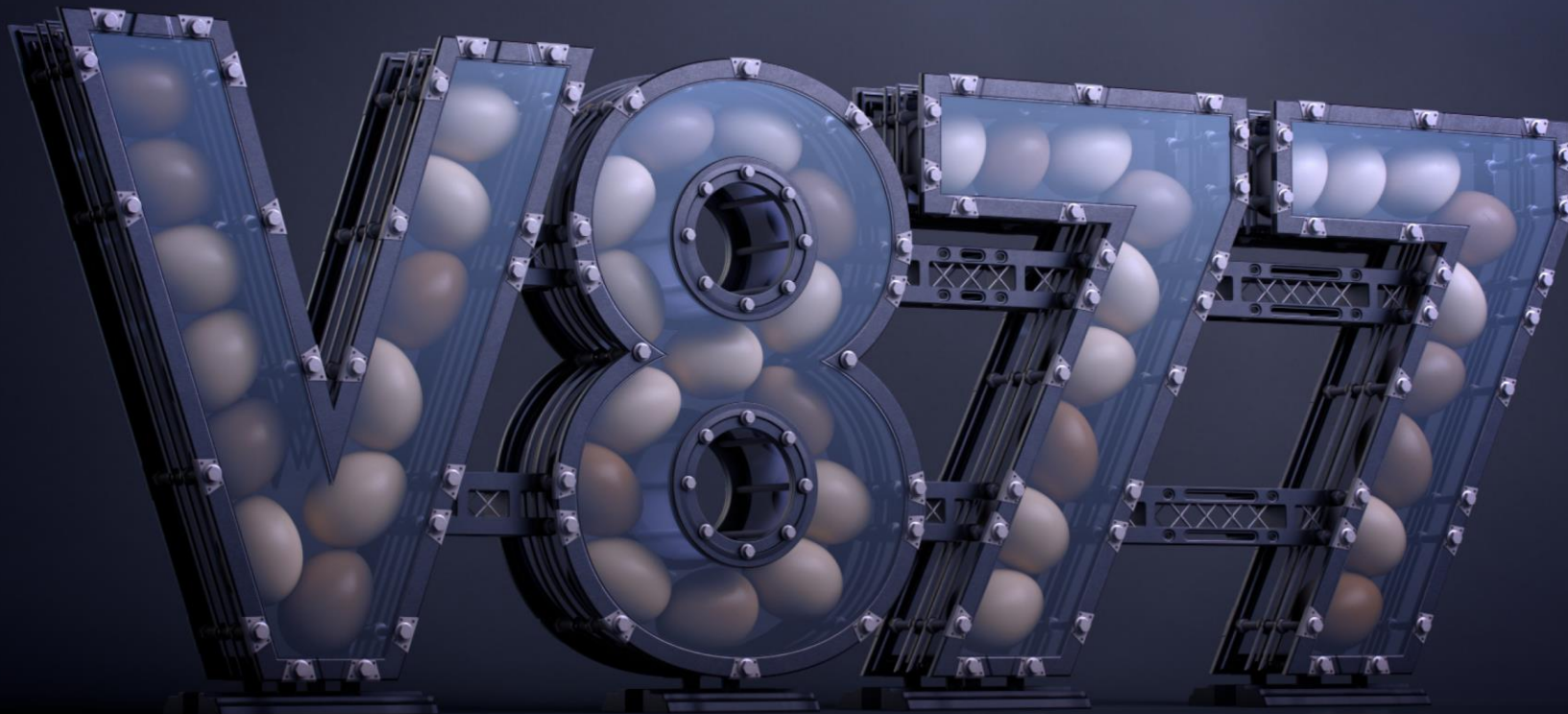
REAÇÃO HISTOPATOLÓGICA E SOROLÓGICA A UMA VACINA DE IMUNOCOMPLEXO CONTRA GUMBORO (CEPA V877) EM AVES SPF E COMERCIAIS

E. C. MUNIZ<sup>1</sup>, M. S. RESENDE<sup>1</sup>, A. F. A. SILVA<sup>1</sup>, R. VERDI<sup>1</sup>, J. DI FABIO<sup>2</sup>, E. L. BORDIN<sup>2</sup>



## Perfil sorológico nos diferentes momentos





**OBRIGADO!**

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**MAGNIplex**

PREVENÇÃO CONTRA GUMBORO

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