ISTITUTI ZOOPROFILATTICI SPERIMENTALI

A network of 10 Institute founded and coordinated by the Health Ministry but also at the service of the regional public veterinary organization (part of the National Heath System)

IZSs work in:

Animal health control and surveillance (FMDV, BSE , Influenza, ecc....)

Control of the food of animal origin (as well as feed for animal breading) both from the microbiological and chemical aspects

Scientific research in the above topics, mainly to the up date of the diagnostic methods but also in the filed of basic research

ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELLA LOMBARDIA ED EMILIA ROMAGNA

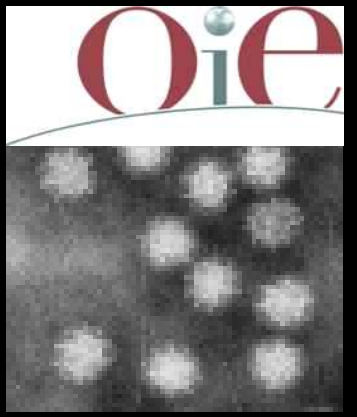
Central laboratories and Direction: BRESCIA

IZSLER at 1950

Regional livestock

Species	Lombardia	Emilia-Romagna
Bovine	1.530.000	570.000
Swine	5.000.000	1.270.000
Horses	43.500	28.500
Sheep & goat	210.000	86.000
Poultry	50.000.000	35.000.000
Rabbit	610.000	850.000

OIE Reference Laboratory for Rabbit haemorrhagic disease



Establisched in 1991 by OIE

Expert: Lorenzo Capucci - DBR

National Reference Centre for viral disease of lagomorphs

Established in 2002 by Health Ministry

Director: Antonio Lavazza - DVetMed

Main diagnostic and research activities:

- Rabbit haemorrhagic disease
- European brown hare sindrome
- Myxomatosis of rabbit

Additional activities in rabbit control (A. Lavazza):

Diagnosis of enteric virus of rabbit (rotavirus and coronavirus) using Electron Microscopy methods

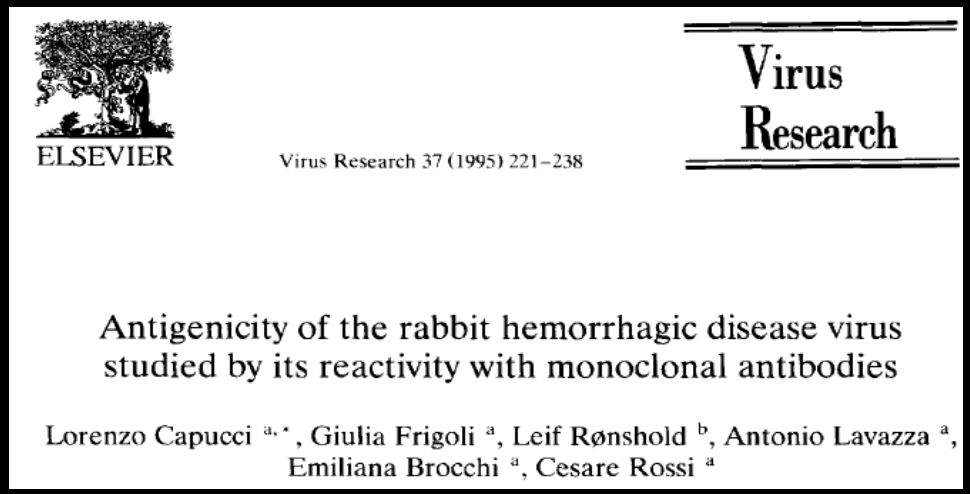
Encephalitozoon cuniculi: serology, PCR and immunohistochemestry used in epidemiological survey at slaughterhouses and farms.

Salmonella typhimurium and Chlamydia: serology

Involvement in the definition of parameters of rabbit welfare.

MONOCLONAL ANTIBODIES
(Emiliana Brocchi – DBR)

Starting from 1990…



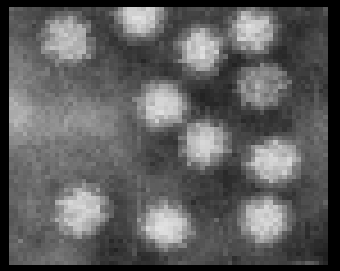
ELSEVIER

Virus Research 37 (1995) 221–238

Virus Research

Antigenicity of the rabbit hemorrhagic disease virus studied by its reactivity with monoclonal antibodies

Lorenzo Capucci [a,*], Giulia Frigoli [a], Leif Rønshold [b], Antonio Lavazza [a], Emiliana Brocchi [a], Cesare Rossi [a]



RHDV & EBHSV

Diagnosis of RHD and EBHS

- Virus identification using sandwich ELISA
- Serology using competition ELISA

...12 years after RHDV appearance in China, in Europe...

ELSEVIER

Virus Research 58 (1998) 115–126

Virus Research

A further step in the evolution of rabbit hemorrhagic disease virus: the appearance of the first consistent antigenic variant

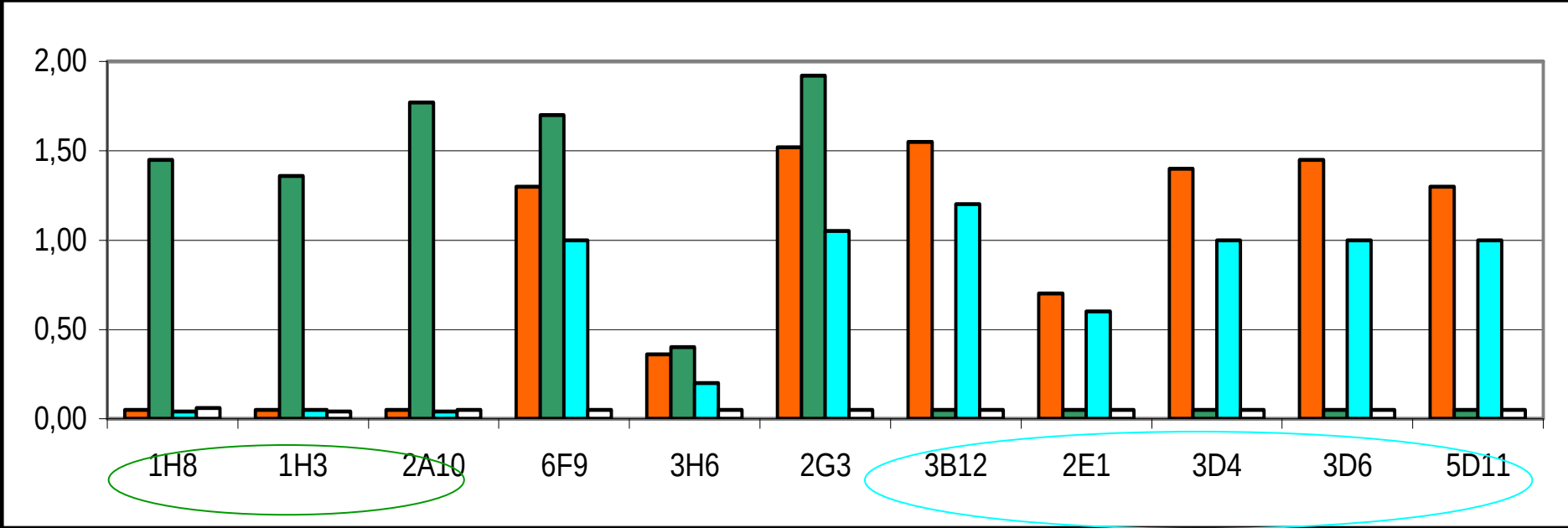
Lorenzo Capucci *, Francesca Fallacara, Santina Grazioli, Antonio Lavazza, Maria Lodovica Pacciarini, Emiliana Brocchi

Department of Biotechnology, Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia, via Bianchi 9, 25124 Brescia, Italy

RHDV-a
the first subtype

A panel of MAbs for the
RHDV typing

RHDV Bs89 PV97 Vt97



In 1995: Rabbit Calicivirus (RCV) – a "new" virus RHDV related but non pathogenic

The Veterinary Record, June 21, 1997 647

Seroconversion in an industrial unit of rabbits infected with a non-pathogenic rabbit haemorrhagic disease-like virus

L. Capucci, A. Nardin, A. Lavazza

Identification of an industrial rabbit farm positive in serology for RHDV **but** not using vaccine and without sign of RHD

JOURNAL OF VIROLOGY, Dec. 1996, p. 8614–8623 Vol. 70, No. 12
0022-538X/96/$04.00+0

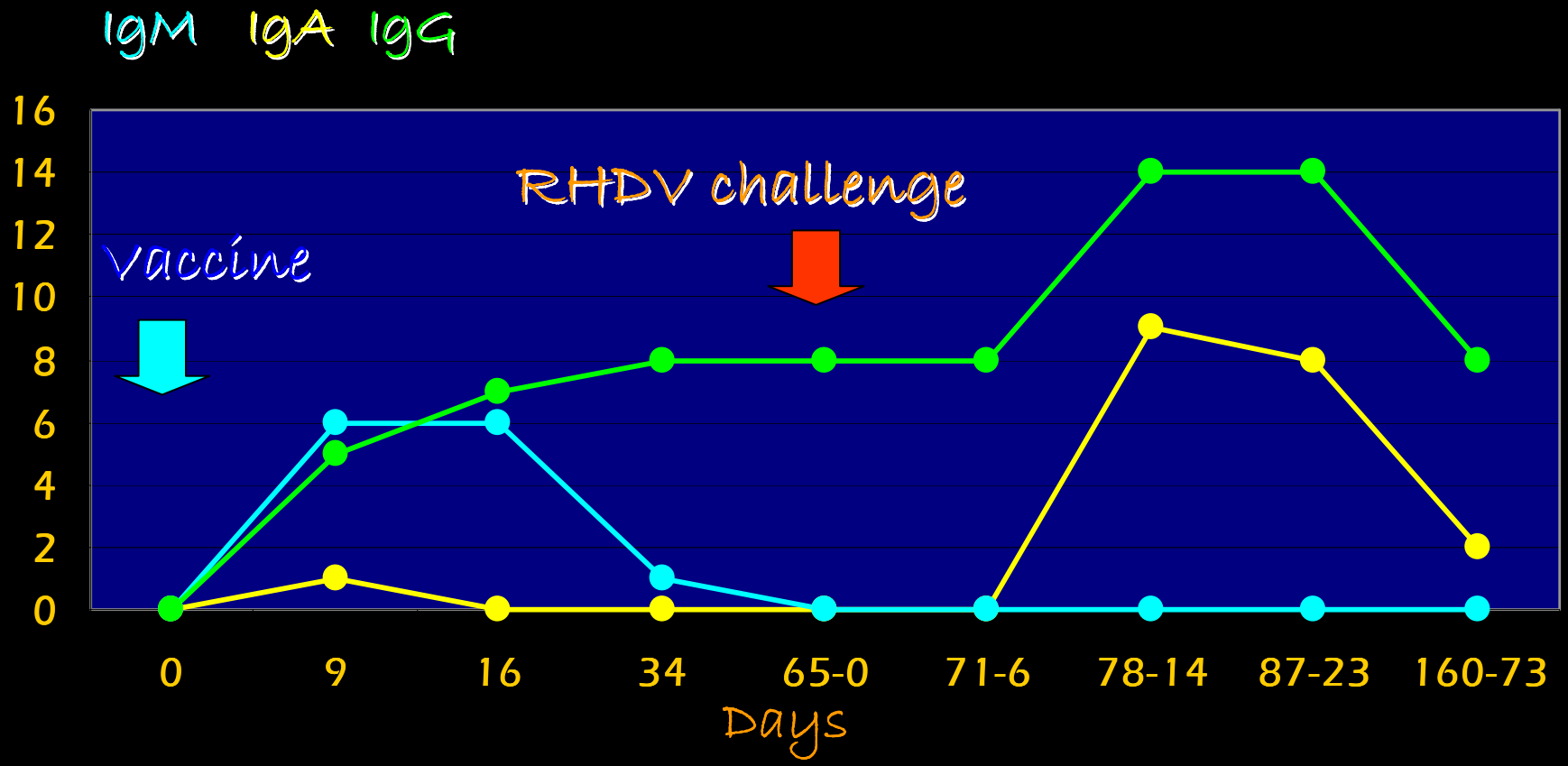
Detection and Preliminary Characterization of a New Rabbit Calicivirus Related to Rabbit Hemorrhagic Disease Virus but Nonpathogenic

LORENZO CAPUCCI, PAOLA FUSI, ANTONIO LAVAZZA, MARIA LODOVICA PACCIARINI, AND CESARE ROSSI*
Istituto Zooprofilattico Sperimentale della Lombardia e dell' Emilia, 25124 Brescia, Italy

VP60 aa identity with RHDV:
- average value 91,5%
- C-terminal half 83,4

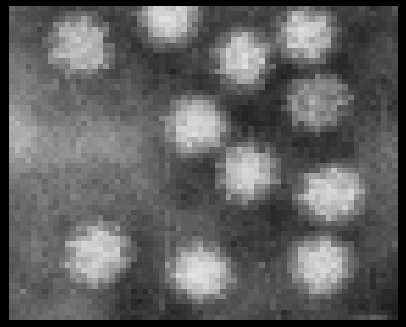
adult rabbits infected:
- seroconversion and viral identification
- **no disease signs**
- total protection from RHDV challenge

ELISA for Isotype serology of RHDV: response after rabbit vaccination



- Inactivated vaccine does not induce IgA production
- IgA in serum decrease towards negative values in **2-3 months**

&



in

RHDV has become endemic in Australian rabbit populations after escaping from **Wardang Island** during experimental studies in 1995

Use of the **Isotype ELISA** for the epidemiological studies of wild rabbits in different Australian regions:

- High level of IgM **and** IgA: rabbit just recovered from **RHD**
- Medium-high level of **only IgA**: rabbit just **re-infected by RHDV**

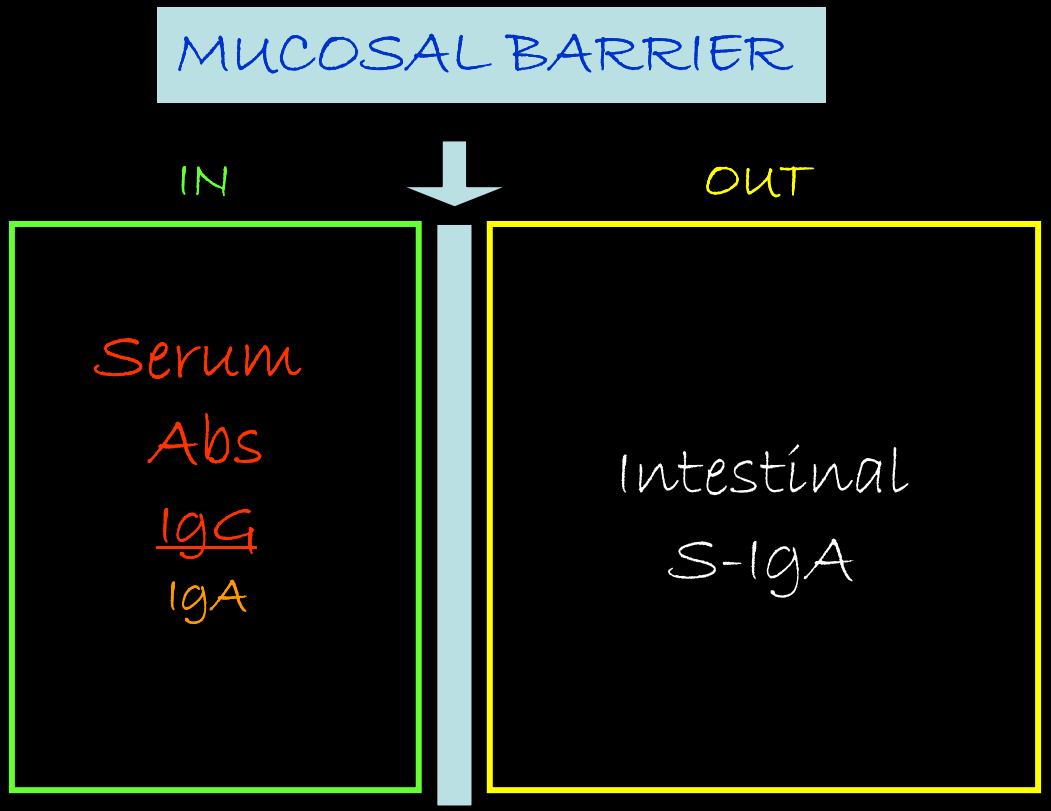
Epidemiology and Infection (2000), 124:3:563-576 Cambridge University Press
Use of ELISAs in field studies of rabbit haemorrhagic disease (RHD) in Australia
B. D. COOKE , A. J. ROBINSON, J. C. MERCHANT, A. NARDIN and L. CAPUCCI

Journal of Applied Ecology 2010, 47, 1137–1146 doi: 10.1111/j.1365-2664.2010.01844.x

The effect of rabbit population control programmes on the impact of rabbit haemorrhagic disease in south-eastern Australia

Gregory Mutze[1]*, John Kovaliski[1], Kym Butler[2], Lorenzo Capucci[3] and Steve McPhee[2,4]

FROM SEROLOGY TO "MUCOSOLOGY" ?



Very important
In RHD protection!

How much are important S-IgA for the protection from the RHDV infection?
How are S-IgA produced?

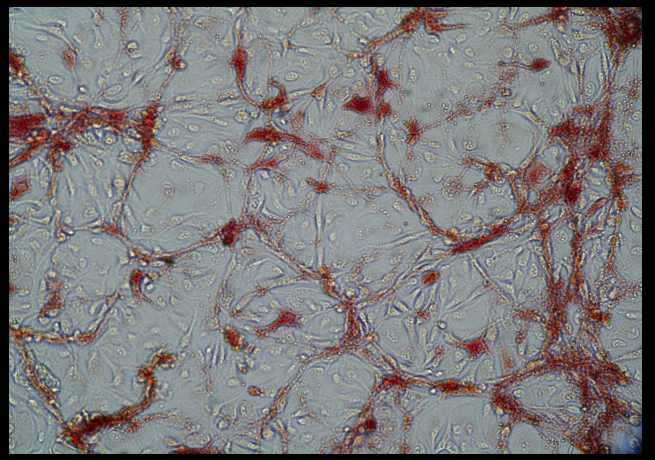
Myxomatosis

Using a panel of MABs:

Serology: ELISA competition using mL71 protein (IMV) as antigen

Virological methods:
Cell culture isolation + immuno staining
PCRs using different primers

First passage of a Mixomatosis virus from the field stained with MAb 1E5



Studies on the genome of the vaccine strains in order to distinguish them from filed strains using PRC (and later serology)

Contents lists available at ScienceDirect

Vaccine June 2010

journal homepage: www.elsevier.com/locate/vaccine

Molecular characterization of SG33 and Borghi vaccines used against myxomatosis

Patrizia Cavadini[a,*], Giuliana Botti[a], Ilaria Barbieri[a], Antonio Lavazza[b], Lorenzo Capucci[a]

THANK YOU FOR YOUR ATTENTION....

ISEO LAKE REGION CLOSE TO BRESCIA: RHDV
"LANDED" HERE IN 1986.....