

MOLECULAR CHARACTERIZATION OF TOROVIRUSES



Dolores Rodríguez Aguirre

Summary

Toroviruses are enveloped viruses, with a positive single stranded RNA genome, and highly pleomorphic viral particles.

These viruses were identified for the first time in 1972, and they have been recently included as a new genus within the *Coronaviridae* family.

The scarce epidemiological studies per-

formed in different countries indicate that toroviruses may be an important cause of gastroenteritis both in humans and in different animal species of major importance in the livestock. Despite this fact, their large geographical distribution, and their ability to infect a broad variety of animal species, these viruses have been poorly characterized.

The main factor that has hampered their study is the impossibility of growing toroviruses in cultured cells, except the equine isolate (BEV), that was the first torovirus been identified.

To start this project the first objective of our laboratory was the development of tools that would let us to undertake the study of the molecular biology of torovirus, and to establish diagnostic procedures with which we will be able to determine their incidence in the human population as well as in the livestock industry.

For this, we used heterologous expression systems (baculovirus and vaccinia virus recombinants) for the expression of the BEV structural proteins. With these means we can study the protein properties in the absence of BEV infection, and to purify these proteins to produce specific polyclonal and monoclonal antibodies. With these antibodies we will be able to follow viral structural proteins during the morphogenetic pathway by confocal and immunoelectron microscopy. The purified proteins will be also used as antigen for the detection of sera positive against torovirus.

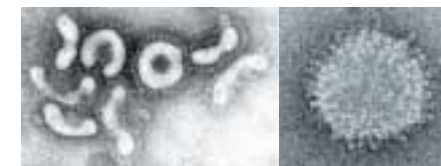
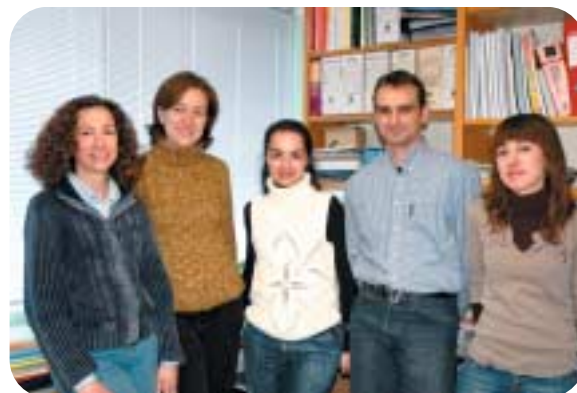


Figure 1. Purified particles of the equine torovirus BEV observed by electron microscopy.

PERSONNEL



• **Group Leader:**

• Dolores Rodríguez Aguirre

• **Predocctoral Fellows:**

• Soledad Blanco Chapinal

• Ana Garzón Gutiérrez

• Ana M^a Maestre Meréns (since Marzo 2003)

• Jaime Pignatelli Garrigós (since Sept. 2003)

Section contents

Table of contents

HOME

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Section contents

Table of contents

HOME

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Section contents

Table of contents

HOME



PATENTS

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CSIC y BIONOSTTRA S.L.

Nº de solicitud 200400120. Ampliación a patente internacional PCT/EP2005/000695

Section contents

Table of contents

HOME