

# “ New lipidic compositions for coating bacteriophages

## THE INVENTION

The invention relates to new lipidic nanoparticles containing bacteriophages. This formulation allows a better stability of the virus capsid and this improves the performance of bacteriophages used as surface disinfectant or in as bacterial prophylactic agents in veterinary or human health. Additionally, our formulation avoids the loss of infectivity during preservation processes.

### Innovative aspects and advantages

- > Stability: The liposome-like particles provide stability to bacteriophages, a thing that allows a better efficacy in a phage treatment. Our nanoparticles provide complete stability to the product for at least 3 months.
- > Lyophilization: Bacteriophages included in these nanoparticles maintain the infectiveness after a lyophilization process.
- > Wide range of cargo: These carriers may contain any kind of bacteriophage.
- > The lipidic mixture of the present formulation comprises inert and inexpensive materials.
- > Versatile: Useful for any kind of phage

### IP Rights

European Patent Application filed on February 2014

### Scientific Team

Montserrat Llagostera at the Dept. of Genetics and Microbiology of the Autonomous University of Barcelona  
Daniel Maspoch, ICREA Researcher at the Catalan Nanotechnology Institute.

## Summary

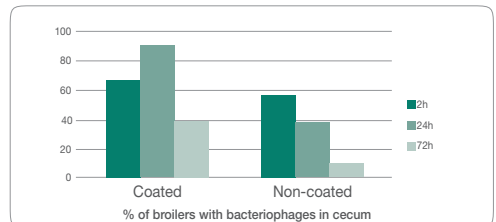
Bacteriophages for control of bacteria are widely used and exist several commercial products already to be used as surface disinfectants, livestock bacterial control agent or food safety product. The problem is that often such products do not show an optimal performance due to different causes:

- pH: If naked bacteriophages are administered to animals or humans a significant decrease of the effective concentration is observed due to the low pH conditions of the gastrointestinal tract.
- Storage: Lyophilization is a good solution for product storage. Nevertheless, when bacteriophages are lyophilized an important decrease of the infectivity is observed.

The nanoparticles developed by our scientists allow a great viral performance of the phages even if they are administered to animals or if they have been lyophilized. Experimental data in Salmonella contaminated poultry show that coated bacteriophages have the same lytic

activity than naked bacteriophages but show longer efficacy against bacteria.

We are seeking a company partner to further develop the technology through a co-development and license agreement.



► Fig. 1 Persistence of coated and non-coated bacteriophages in the ceca of broilers



### Contact

**Lucas Martin** · UAB Technology Transfer Office  
Lucas.Martin@uab.cat · T. +34 935 868 923