BACTERIOPHAGUE FOR THE PREVENTION AND TREATMENT OF A MENTAL DISORDERS

A research group from CIBER, Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta, Universitat Pompeu Fabra, Fundación para el Fomento de la Investigación Sanitaria y Biomédica de la Comunitat Valenciana, Universitat de València y Consejo Superior de Investigaciones Científicas have identified a bacteriophage to be used in the treatment and prevention of metal health disorders.

The Need

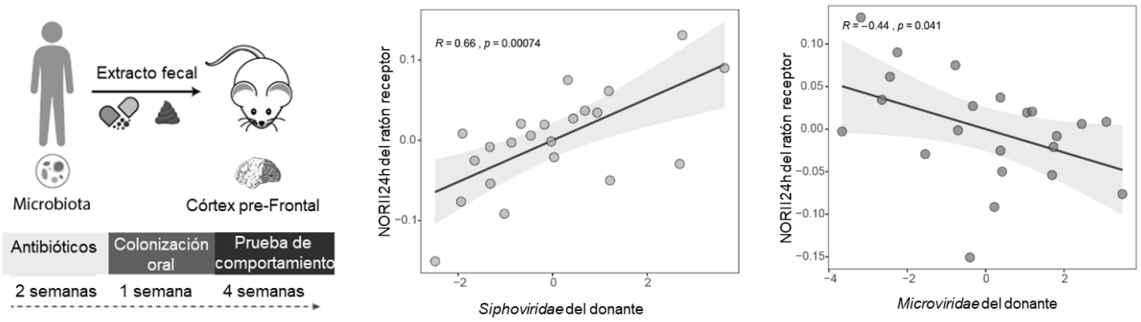
There are numerous clinical and preclinical studies which show that the gut microbiome is a key player in the regulation of neurogenerative processes, modulation of cognition, and neurological disorders. Moreover, new evidences suggest that viruses can deeply affect host physiology and disease. Therefore, Bacteriophages could be considered as novel actors in the gut microbiome-brain axis.

The Solution

Caudovirales bacteriophages were associated with improved executive function and memory in humans. Faecal microbiota transplantation from humans with high *Caudovirales* increased memory of mice by up-regulating memory promoting immediate early genes (*Arc, Egr2, Dusp1, Btg2, Ier2*) and down-regulating memory suppressor genes (*Ide, Ppp1r42*). Supplementation of *Lactococcus 936* bacteriophages increased memory and the expression of activity-regulated genes in flies (*Sr, puc, kay, Sik2, Arc1*). Treatment with the phage 936 may help in alleviating cognitive disorders, even in the general population.

Innovative Aspects

- Increased memory capacities through the upregulation of the expression of genes involved in synaptic plasticity, neuronal development and memory.
- It can be administered as a pharmaceutical composition, a stool preparation, and / or a food composition.



Experimental design for the study and the result graphs showing the correlation of Spearman's rank in *Siphoviridae* and *Microviridae* values.

Stage of Development:

Associations found in humans and validated in vivo essays in mice and *Drosophila melanogaster*.

Intellectual Property:

- Spanish patent filed (13rd August 2021)

Paper:

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Aims

Looking for a partner interested in a license and/or a collaboration agreement to develop and exploit this asset.

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