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**Biotechnology / Synthetic Biology / Systems Biology - Part II**

**INNOVATION IN BACTERIOPHAGE-BASED BIOCONTROL OF THE PLANT PATHOGEN RALSTONIA SOLANACEARUM THROUGH IRRIGATION WATER**

*E. G Biosca*<sup>1</sup>, *B. Álvarez*<sup>1,2</sup>, *M.M. López*<sup>2</sup>

<sup>1</sup>*Universitat de Valencia, Microbiología y Ecología, Burjassot, Spain*

<sup>2</sup>*Instituto Valenciano de Investigaciones Agrarias IVIA, Bacteriología, Moncada, Spain*

**Backgrounds**

*Ralstonia solanacearum* is a soil- and water-borne plant pathogen responsible for bacterial wilt, one of the most devastating bacterial diseases of solanaceous crops. This pathogen has a quarantine status in the European Union (EU) where it has been frequently detected in waterways, and associated with several water-borne outbreaks. This poses a problem for growers because the use of *R. solanacearum* contaminated water for irrigation is prohibited in the EU, where water scarcity is increasing, particularly in Mediterranean countries.

**Objectives**

The objective was to develop an innovative biocontrol procedure based on the lytic action of *R. solanacearum* specific bacteriophages for bacterial wilt disease management through irrigation water.

**Methods**

Lytic bacteriophages of *R. solanacearum* were isolated from environmental water and selected according to their specificity, stability and lytic activity under different environmental conditions. Morphology, and molecular and genomic characteristics were also determined. Biocontrol ability was assessed in irrigation water and host plants watered with the pathogen alone or with different combinations of the bacteriophages, also after their production at pilot scale.

**Conclusions**

The innovative technology developed, which is patent pending (priority number P201530730), reduces bacterial wilt incidence in all cases, with disease absence in most of them. It offers a natural, efficient and easily applicable strategy for bacterial wilt prevention and/or control, with less legal restrictions and environmental impact than chemical treatments. It can also be incorporated into integrated management programs against bacterial wilt. (CPI\_14\_244\_Valoritza i transfereix\_VLC/CAMPUS\_UVEG & IVIA).