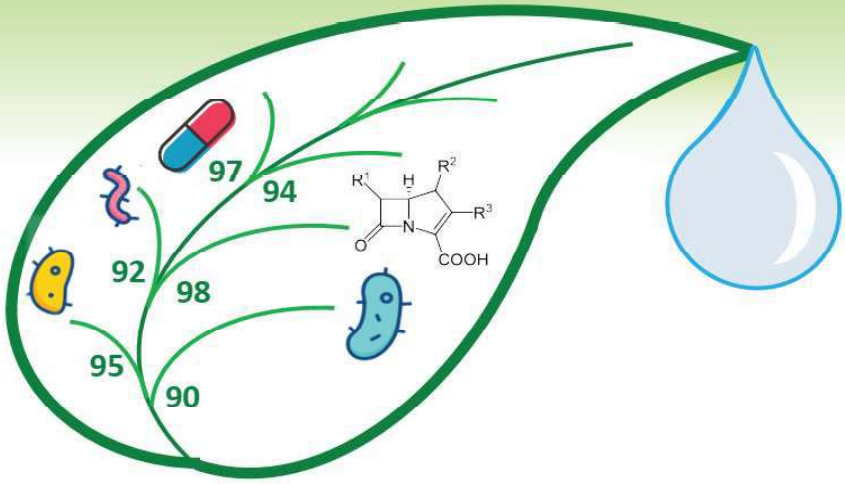
Microbes For Life



2021

LBSM
Laboratoire de Biologie des Systèmes Microbiens

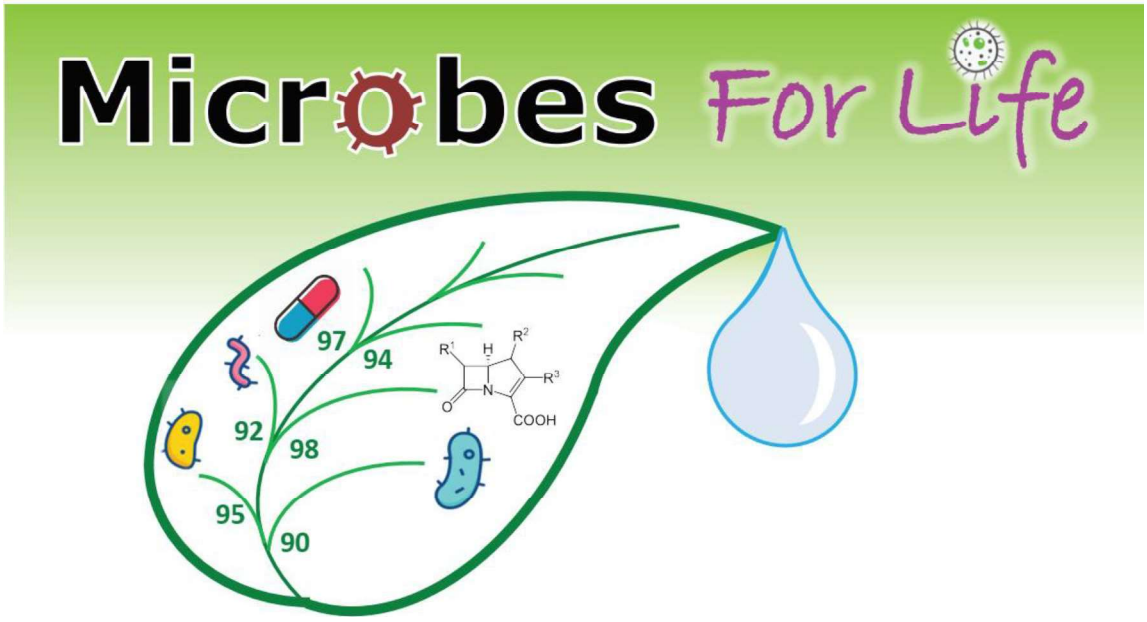
Microbes For Life

1st Microbes For Life

International webinar, 20-22 October, Algiers

Abstract Book

https://lbsm-lab.wixsite.com/microbesforlife2021



International "Microbes For Life" Webinar 2021

October 20-22, 2021

Algiers, Algeria

Organizing Committee

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Bacillus Velezensis Rc218 As A Biocontrol Agent Against *Fusarium* Head Blight Of Wheat: Revealing Genome Insights And Metabolite Profile Production.

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Bacillus velezensis RC218 was originally isolated from wheat anthers as a potential antagonist of *Fusarium graminearum sensu stricto*, the causal agent of Fusarium head blight (FHB) in Argentina. We demonstrated the ability of *B. velezensis* RC218 to reduce disease severity and DON accumulation *in vitro*, under greenhouse and field trials. The current presentation extends characterizing *B. velezensis* RC218 by genome sequencing and secondary metabolite production. Secondary metabolite clusters wereidentified with antiSMASH3.0 or direct blasting. Culture supernatants containing secondary metabolites were analyzed by LC-MS. The field study demonstrated that *B. velezensis* RC 218 could reduce FHB severity and the associated mycotoxin (deoxynivalenol) production to undetectable levels. The genome sequencing allowed us to accurately determine the taxonomy of the strain using a phylogenomic approach, which places it in the *B. velezensis* clade. The genome mining allowed us to identify 9 active secondary metabolites conserved by all *B. velezensis* strains and one additional secondary metabolite, the lantibioticericin, which is unique to this strain. This represents the first confirmed production of ericin by a *B. velezensis* strain. Biocontrol activity can be related to the production of several lipopeptides, from the surfactin, fengycin and iturin families. Microbiome analysis also demonstrated that application of the bioicontrol on spikes does not impactnative populations dynamics.

Keywords: *Fusarium* Head Blight, *Bacillus velezensis*, metabolite profile, Biocontrol

SESSION 5: Agronomy, Environmental Microbiology, and Green solutions ___

Green Nanotechnology: Small Solution To Big Problems For Agriculture, Food Industry And Biomedical Field

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In green nanotechnology, nanomaterials are synthesized using the microorganisms (bacteria, fungi, algae). Biosynthesized nanomaterials have great potential for improving the quality of life through its applications in the food, biomedical and agricultural field. In biomedical, green