

## PhD Position

**Project title:** BIOSEPT: Lipopeptide-Based Biocontrol Strategies Against Septoria Tritici Blotch in Wheat

**Host Laboratory :** Résistance Induite et Bioprotection des Plantes, Université de Reims Champagne-Ardenne

### Context and Objectives

Wheat is grown on nearly 5 million hectares in France, with the Grand Est region being a major production hub. Its productivity is increasingly compromised by *Zymoseptoria tritici*, the fungal agent of Septoria leaf blotch (STB), one of the most devastating wheat foliar diseases. The rapid emergence of fungicide resistance and the pathogen's high genetic variability have rendered traditional control strategies less effective, highlighting the urgent need for sustainable alternatives. The BIOSEPT project proposes an innovative biocontrol approach using beneficial bacteria and their bioactive compounds—lipopeptides (LPs). Preliminary studies demonstrated that *Bacillus velezensis* BE2 can suppress *Z. tritici* by both inhibiting its growth and activating wheat immune responses (Dutilloy et al., 2024), while *Burkholderia* sp. BE10 produces glycolipopeptides with strong antifungal properties (Esmaeel et al., 2019). The novelty of BIOSEPT lies in the synergistic use of LPs from both strains, backed by a mechanistic investigation into their interactions with the pathogen and the wheat microbiome.

The main objective of this PhD project is to explore the molecular and ecological mechanisms by which lipopeptides (LPs) from *Bacillus velezensis* BE2 and *Burkholderia* sp. BE10 suppress *Zymoseptoria tritici* and enhance wheat immunity.

### Candidate Profile

The ideal candidate should have a Master's degree in microbiology, plant pathology, or a related field, with expertise in microbiology, molecular biology, and plant-microbe interactions. Experience in molecular techniques, microbiome analysis, and data analysis tools using R or Python is essential. Strong written and spoken English is required for project communications.

We seek a motivated, collaborative individual with excellent analytical, writing, and communication skills. The position offers access to advanced research facilities and opportunities for skill development, networking, and contributing to innovative biocontrol solutions.

### Application Process

This position is part of the 2025 ABIES Doctoral School competition.

- **Application deadline:** May 2, 2025
- **Oral presentation:** First week of June 2025 at AgroParisTech, Paris
- **Start date:** October 2025

### **Required documents:**

- Curriculum Vitae
- Motivation letter
- Academic Transcripts (Bachelor's and Master's degrees)
- At least two letters of recommendation (with referee contact details)

To apply, please send all documents as a single PDF to:

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