



JUDITH LUNDBERG-FELTEN

*From Sweden to France*



Project: **Functional microbiomes of boreal and temperate forest trees**

Research topic: **Biology**

Swedish Institution: **Swedish University of Agricultural Sciences**

French Institution: **INRAE Nancy, Unité 1136 Interaction arbres microorganismes**

Dates of mobility: **01/09/2024 to 09/07/2024**

Program: **SFVE-A**



## PRESENTATION

[Judith Lundberg-Felten](#) is a senior lecturer at the [Department of Forest Mycology and Plant Pathology, Division Forest Microbiology](#) at the [Swedish University of Agricultural Sciences](#). [Her research](#) focuses on the establishment of the symbiotic relationship between the roots of forest trees and beneficial soil fungi, called ectomycorrhiza. This symbiosis allows trees and fungi to exchange nutrients and sugars and is crucial for forest ecosystem health, tree and fungal growth and CO<sub>2</sub> sequestration. Through her current and [past research](#) she has explored the molecular mechanisms that lead to recognition of root and fungus, the restructuring of their cellular surfaces in the process of symbiosis establishment and the benefits that this relationship has for the two partners. One of her current (2024) research projects addresses how the symbiosis can help trees cope with drought and how this can be applied in nurseries to make tree seedlings more drought resistance upon outplanting into the forest. With her research she aims to generate fundamental knowledge on the fascinating, hidden relationship between tree roots and soil fungi and to generate inspiration for innovation leading to a more sustainable forestry.

## ACTIVITIES IN FRANCE

Judith Lundberg-Felten's main objective with her visit to the [unit of tree-microbe interaction](#) at [INRAE Grand-Est Nancy](#) was to find synergies between hers and the host's ongoing projects and to develop ideas for common future research application. Judith was hosted by [Claire Venault-Fourrey](#). Judith gave a presentation about her research entitled "Ectomycorrhizal symbiosis – from molecules and cells to forest management" for the campus INRAE Grand-Est Nancy on September 3<sup>rd</sup>. Thereafter she discussed research such as mechanisms of forest soil bacteria, fungi and tree interaction in relation to drought with [Aurélie Deveau](#), molecular signaling and nutrient transport in tree-fungus interactions with [Francis Martin](#), root-fungus signaling related to secondary metabolites, and endophyte-mycorrhizal relationships with Claire Veneault-Fourrey and [Annegret Kohler](#) (research engineer and manager of the [ecogenomics platform](#)),

fungus community research and the role of fungal necromass and its composition with [Marc Buée](#) and molecular signaling and root development during mycorrhization with [Clémence Bonnot](#). The discussion led to the identification of possible collaborations in research projects that Aurélie and Clémence are currently applying, for which Judith is given the opportunity to be included as a collaborator. Claire and Judith have further identified collaboration opportunities on nutrient exchange and molecular signalling in mycorrhizal symbiosis that will be the base for a funding application in collaboration to the Swedish research council. The researchers also investigated possible specific French-Swedish partnership-funding opportunities but could not identify any at the moment. However, given the [renewed declaration of intent](#) between Sweden and France around forests and forest politics, the researchers are positive that funding applications for French-Swedish collaborations will arise in the future for which this visit will be an excellent basis to develop common projects. The visit also led to the decision to prepare an application for a [COST action](#) to gather and exchange with researchers in Europe on functional forest microbiomes on a regular basis. Such an action has the potential to create a multi-partner network in this research area for exchanges, workshops and summerschools and also to lift the importance of the research for sustainable forestry to the EU level.