In all plants, microbial endophytes establish symbioses with their hosts. Endophytes belong to a broad range of taxa and have been detected in different plant organs, as well as from plants growing in different ecosystems. Most of these endophytes originate from the soil environment and then colonize the host plants. The ecology of such microsymbionts, the composition of their core and satellite microbiome in various plants, their colonization process, as well as niches establishment and mechanisms of plant–microbe interactions are still poorly understood and merit further researches. The unraveling of these processes will provide the knowledge regarding how the beneficial and commensal microbes establish and maintain intimate associations with their hosts. Gaining knowledge on the behavior of specific strains both in the soil and in above- and below-ground plant parts, on the genetic traits required for colonization and establishment on and inside the plants, will further increase our understanding of niche adaption of specific strains and will later on help to develop successful application strategies. Also, the effect of endophytes from the above ground parts, and not deriving from soil environment, on the soil communities throughout the plant interface is of importance. Overall, a better knowledge on soil, plants and endophytes will increase our understanding on how these microsymbionts interact with their environments. Endophytes represent additionally highly promising alternatives to synthetic chemistry for crop production and protection in sustainable agriculture against abiotic and biotic stresses. They can be also useful for phytoremediation strategies. However, successful applications in agricultural practice require efficient plant colonization by endophytes. This can only be achieved by a thorough understanding of the molecular basis of their association with the plants. This Special Issue will gather research and review papers aiming to improve our understanding of the mechanisms and routes of colonization, the role of the soil in plant identification and colonization, how endophytes exploit niches inside the plant, and what are the plant responses to endophyte establishment. Additional knowledge on genetic and genomic informations as well as metabolomics information is also required for a better understanding of soil derived endophytes, including fungi, bacteria and archea as well as effects of endophytes from above ground parts on soil communities. Deciphering more the black boxes of endophytes will help both basic knowledge as well as application of endophytes in agriculture.

**Plant and Soil special issue**  
**Call for papers “Soil, Plants and Endophytes”**

Topic includes but is not limited to:

- Ecology of soil derived endophytes,
- Effects of endophytes from the above ground parts on soil microbiota
- Core and satellite microbiome associated with roots and other parts of plants and differences with soil microbiota
- Molecular basis of plant-soil derived endophyte association
- Understanding of niches, sources and ways of colonization of endophytes
- Vertical and horizontal transmissions of endophytes
- Mechanisms of plant-endophyte associations
- Biocontrol and induced systemic resistance against pathogens by endophytes
- Use of endophytes for biofertilisation and to alleviate abiotic stresses
- Phytoremediation through the use of endophytes
- Genomic and metagenomic information
- Transcriptome and metabolome responses of plants to endophyte inoculation
- New tools to decipher the black boxes of soil derived endophytes

**Manuscript submission deadline:** January 31st 2015  
**First round of review:** March 2015  
**Accepted manuscript:** June 2015

**Lead editor:** Stéphane Compant (Austria).  
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During the online submission procedure, when asked to ‘Select an Article Type’, authors must choose ‘S62 – Endophytes’ from the dropdown menu.

The Publisher or the guest editors will not be responsible for the omission of manuscripts from the special issue if the above procedures were not followed.