

**STSM title: Standardized and tested monitoring protocols for diseases of sentinel trees (arboretum/botanical garden)**

Short Term Scientific Mission (STSM), COST Action FP1401

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Living plant collections in botanic gardens may serve as early warning systems to help predict and prevent the invasion of exotic plant pathogens that are potentially damaging to native tree species. The objective of the STSM was to study novel host-pathogens interactions on congeneric trees located in the Atatürk arboretum in Istanbul.

Symptoms were evaluated *in situ* for each tree of 38 *Quercus* species; leaves and/or shoots were taken from different trees of each species. The material was divided in two subsamples: one for isolation and other for NGS analysis. The symptoms on leaves and twigs/branches were described and recorded by taking photographs. Cankers on branches were found only on *Q. dentata* and *Q. infectoria*. No symptoms were found on three species. Leaves and shoots containing apparently healthy and symptomatic parts were surface-sterilised, cut into small pieces and placed on Potato Dextrose Agar. Growing isolates were grouped according to morphological characteristics, sub-cultured and incubated at 24°C for molecular identifications. Additionally, the fungal community from symptomatic and non-symptomatic tissues was studied using Next-Generation Sequencing (NGS) with Illumina Miseq.

The molecular analyses could not be completed during the STSM, but results will reveal the populations of endophytes and pathogens of 38 *Quercus* sp. from different parts of the world that grow together in the same location. Based thereon, it may be deduced whether some pathogens jump host, and novel pathogens may be detected in some species. The analysis with NGS methods may also allow detection of endophytes or pathogens in non-symptomatic trees that could be pathogens for other species.

This STSM illustrated the use of botanical gardens to identify potentially harmful exotic pathogens on tree species from many origins in one place, in particular by combining work in the field, traditional and molecular techniques in the laboratory and the final data elaboration. The results will reveal the usefulness of this approach to identify the risk of host jump and emergence of novel host-pathogen interactions between alien and native tree species.