



**Project N - Supervisor: Ana Margarida Fortes BioISI | Co-supervisors: Paula Lopes, Rita Pacheco BioISI**

**Title: *Molecular and metabolic markers of Grapevine Trunk diseases***

**Objectives: Establishment of robust molecular and metabolic biomarkers of grapevine trunk diseases for early monitoring of grapevine propagating material in nurseries**

### **Methodology:**

Grapevine trunk diseases (GTDs) are amongst the major challenges for viticulture with losses up to 50% of the normal yield being reported (Bertsch et al., 2013, Plant Pathology). According to Gramaje et al. (2018 Plant Diseases), more than 133 fungal species, belonging to 34 genera, have been associated to GTDs. Since the treatment with sodium arsenite was prohibited due to its toxicity to the environment and humans and lack of efficient control strategies, research on the factors underlying the wide spread of GTDs constitutes an urgent matter.

The PhD student will participate in a field screening in diverse Portugal wine regions from Douro to Alentejo. The most informative symptomatic and asymptomatic leaves and fruit samples (previous selection performed under the scope of project Grapevine TRUNKBioCode) will be used for transcriptomics (RNAseq) and metabolomics (LC-MS/MS) analyses. Omics data will be integrated using several bioinformatic platforms promoted by the undergoing COST Action Integrate and used to establish models regarding the effects of GTDs on vine physiology considering organ specific responses. Putative molecular and metabolic markers will be identified and validated over two productive seasons. This will constitute a starting point for the development of a microfluidic device in collaboration with IST for the detection of metabolic biomarkers associated with GTDs. This PhD thesis will benefit from three recently approved projects on grapevine and sustainable wine production.

**Supervisor: [Ana Margarida Fortes](#)**

**Co-Supervisors: [Paula Lopes](#) and [Rita Pacheco](#)**

### **Type of fellowship**

National X

Mixed (Portugal and abroad):