# Round Table 3
# Inventory of microflora and identification of beneficial microorganisms
Patrice Rey

1. Study microbial communities colonizing wood tissues : plants sampled in different countries

2. Sampling of vines over time

3. Interactions between microorganisms

4. Wood tissues : a source of potential biocontrol agents

# 1. Study microbial communities colonizing wood tissues : plants sampled in different countries

**Objective : to know the pathogens involved in GTDs but also to isolate BCAs specific to certain regions**

**Standardize the sampling method :**

- ✓ Compare the **cultivars** =
  - Same international cultivars *(Chardonnay, Cabernet)*
  - Cultivar specifics to certain regions *(Furmint to produce tokai, Mavrud in Bulgaria)*
- ✓ Cultivars use to produce wine / table grapes *(South of Italy)* ?
- ✓ Organic or conventional vineyard ? = conventional vineyard
- ✓ Same training system (see RT2) ?

**Rootstocks** = International rootstocks : SO4 ? To select among the first 3 rootstocks

# 1. Study microbial communities colonizing wood tissues : plants sampled in different countries

**Foliar GTDs-symptomatic / Asymptomatic** : Use vineyards that are surveyed.
Uproot grapevine : not a problem, even for healthy plants !

**Age of plants**: 15- 20 year-old plants

**Sampling time** : at the veraison (after the symptoms has appeared)

**Which part of the plants have we to sample ?**
= at least 2 samples from the trunk (apparently healthy wood and the most representative necrosis)

Connect quantity of necroses / foliar symptoms / microflora

Study the microflora that colonise the rhizosphere ?

# 1. Study microbial communities colonizing wood tissues : plants sampled in different countries

**Standardize the materials and methods :**

- DNA/RNA extraction = verify the quality of DNA/RNA
- Amplifications, primers, etc = to use the same standard protocol *(to be on the website)*
- Send the DNA/RNA sequences to one platform

- Which parts of plants are the more useful to sample : at least 2 samples in the trunk *(apparently healthy wood and the most representative necrosis)*

# 2. Sampling of vines over time

- ✓ Uproot vines
- ✓ To determine if the microflora shifts are associated with the development of wood necroses
- ✓ Determine if microbial shifts occur in various countries
- ✓ Compare the high-throughput sequencing and microarray results

# 3. Interactions between microorganisms

- ✓ **Imaging analyses** : to study interactions between the microflora (bacteria / fungi) with tools like DOPE-FISH
- ✓ **Cultivable methods** to isolate and use the microorganisms
- ✓ **Screening of microorganisms**: first in Petri dishes (include wood extracts in the agar?) then on plants ?
- ✓ **Role of bacteria**: they can contribute to the breakdown of wood or remove compounds that may be toxic to decay fungi. They predispose wood to fungal attack (according to the literature).
- ✓ **Bacteria + pathogenic fungus**, in certain cases = association of wrongdoers?

# 4. Wood tissues : a source of potential biocontrol agents

✓ **Trichoderma strains are used as BCAs** (not always isolated from grapevines) :

- Hungary = many Trichoderma are detected in the wood tissues (3 Trichoderma species from Tokai region, they grow at 5 °C, even at 30 °C).
- 2 Trichoderma species (Remedier) registered in Italy, they are applied on pruning wounds.
- Esquive in France (to control Eutypa dieback and esca)

✓ **Combine BCAs :**

For instance: bacteria on the pruning wounds or endophytic bacteria + BCA in the rhizosphere

✓ Impact of BCAs on wine quality ?