

Interactions between xylem-specialized phytopathogenic bacteria and the endophyte community occupying it

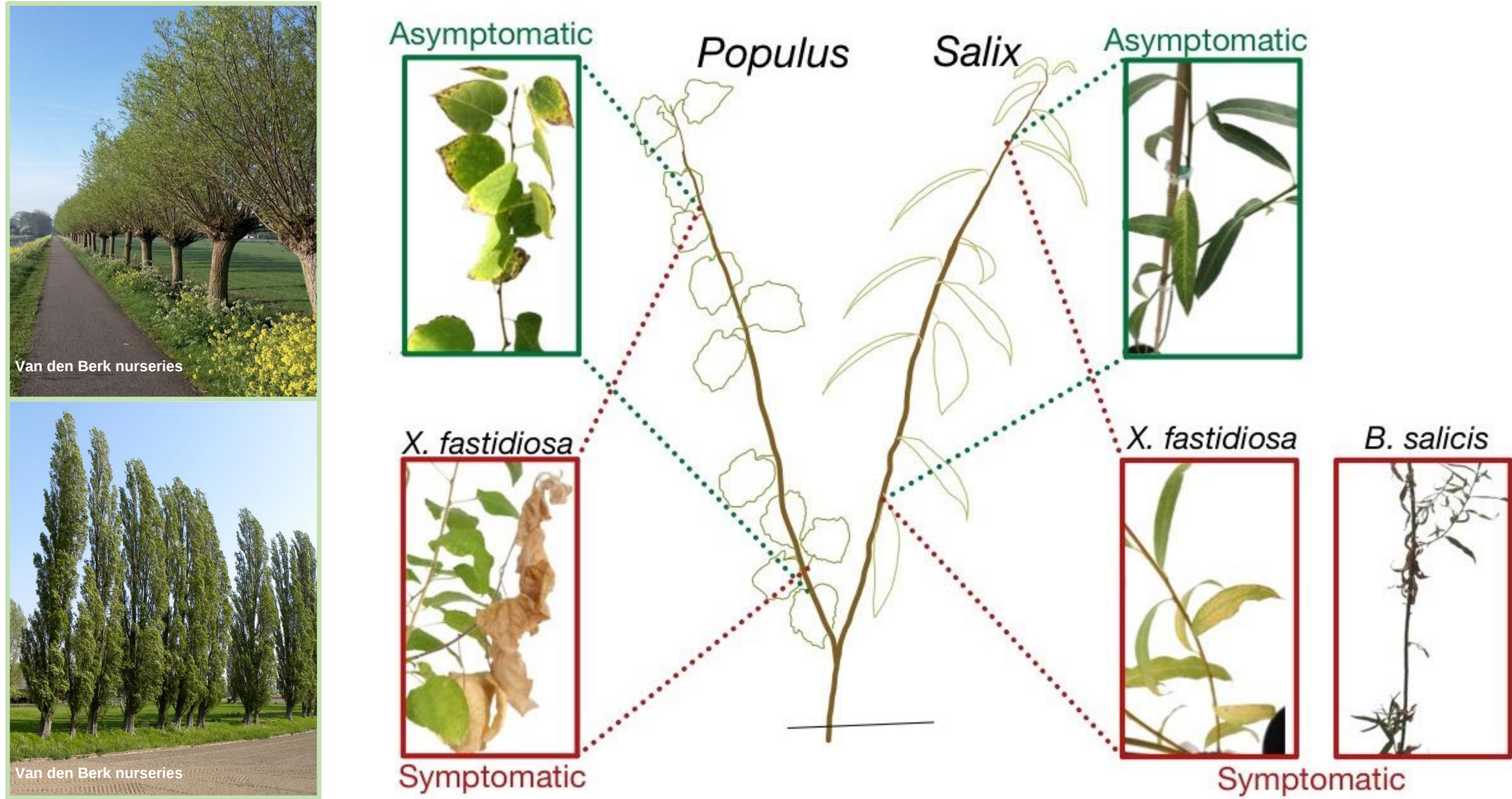
The case of *Brenneria salicis* and *Xylella fastidiosa* in *Salix* and *Populus* genera

Pesenti L.¹ and Bragard, C.¹
¹ : UCLouvain, Earth and Life Institute (ELI), Applied Microbiology, SAVE (Plant Health), Louvain-la-Neuve, Belgium

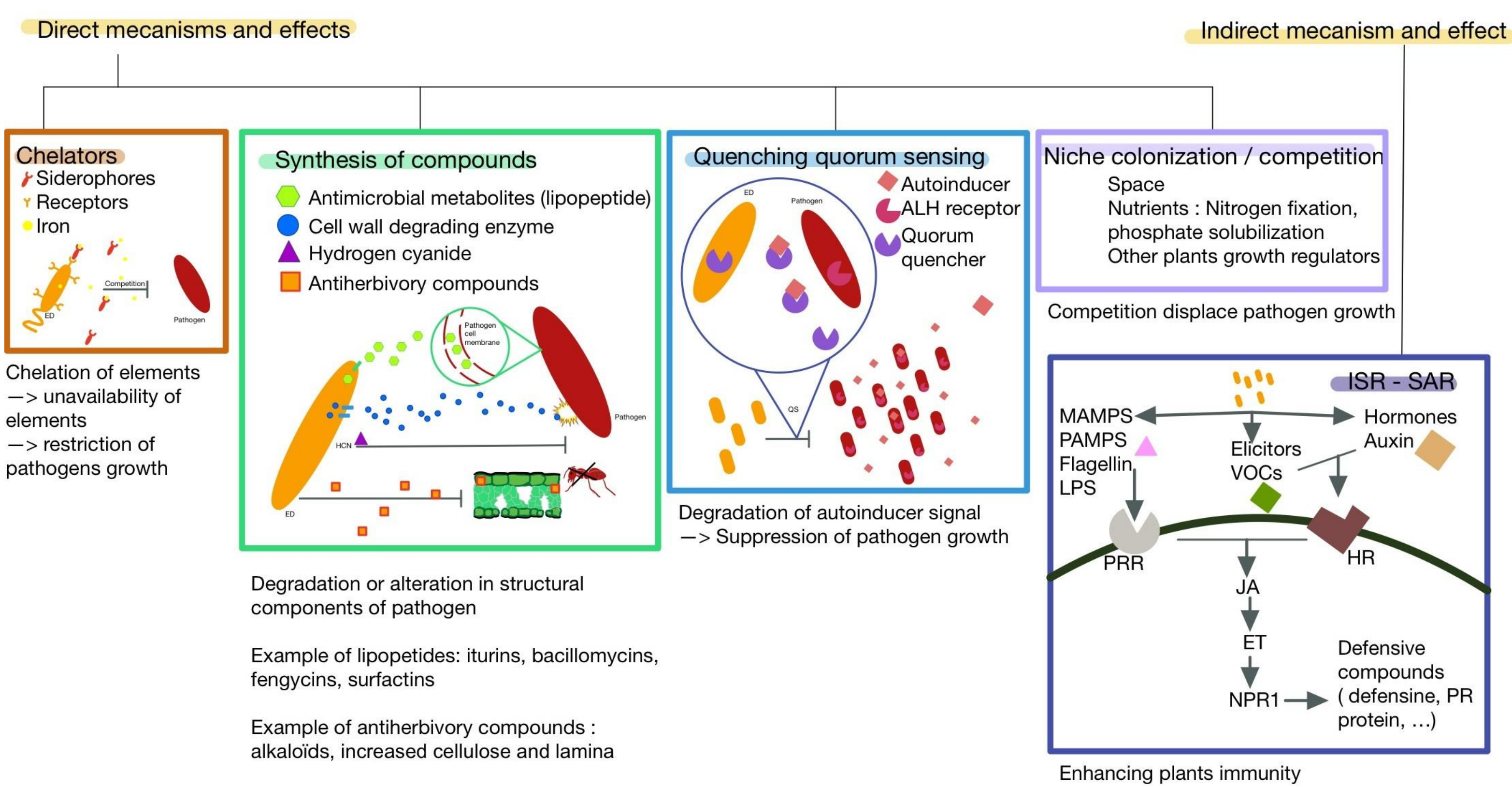
Background : *Salix* and *Populus* with *Brenneria salicis* and *Xylella fastidiosa*

B. salicis is the causal agent of the watermark disease on *Salix* and spreads in UK, Netherlands, Belgium and Japan [1].
X. fastidiosa is the causal agent of the Pierce disease, the Almond leaf scorch, the Plum leaf scald, the Citrus variegated chlorosis and the Olive quick decline syndrome [2].
Salicaceae are good - potential - host for *B. salicis* and *X. fastidiosa* :

- Along riparian areas forming a closed-mesh network
- Hosts of several potential insect vectors
- Plants can be symptomatic or asymptomatic [3,4].



Hypothesis : Do interactions between phytopathogenic bacteria and endophytes play a role the disease syndrome ?

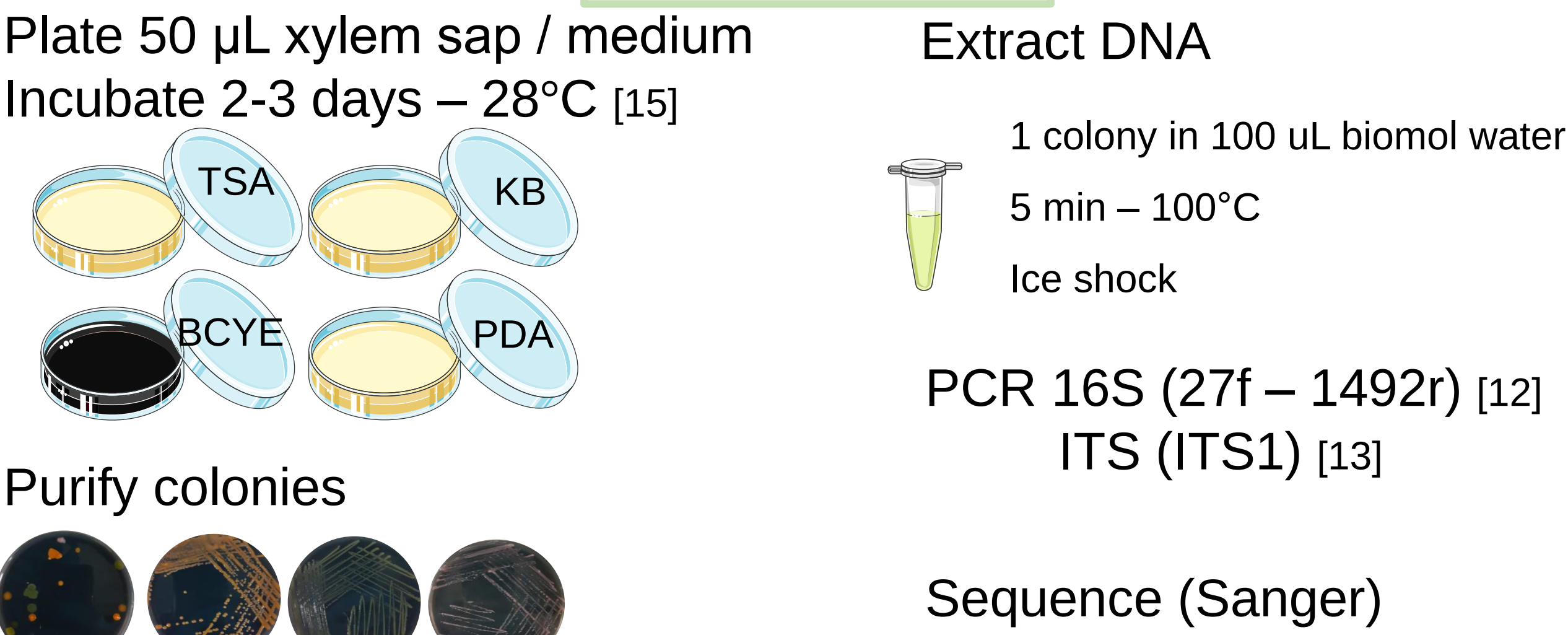


[5, 6, 7, 8, 9, 10]

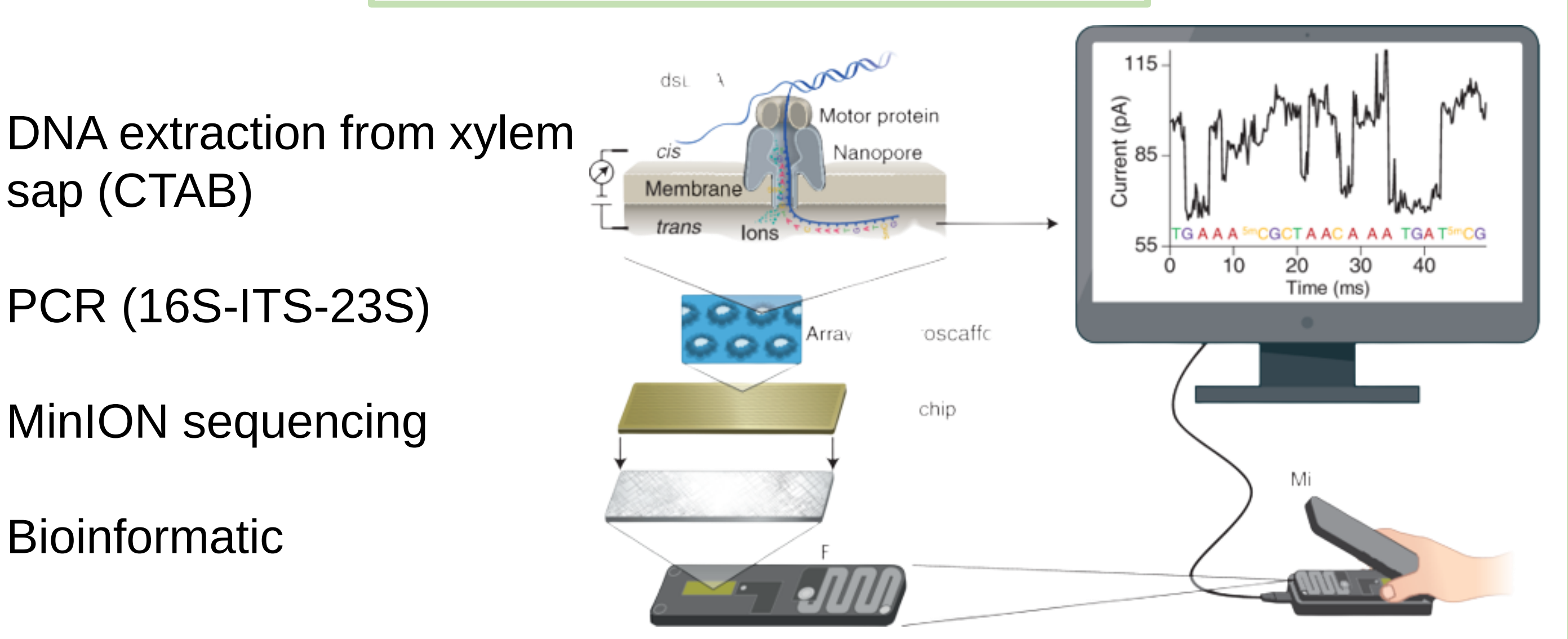
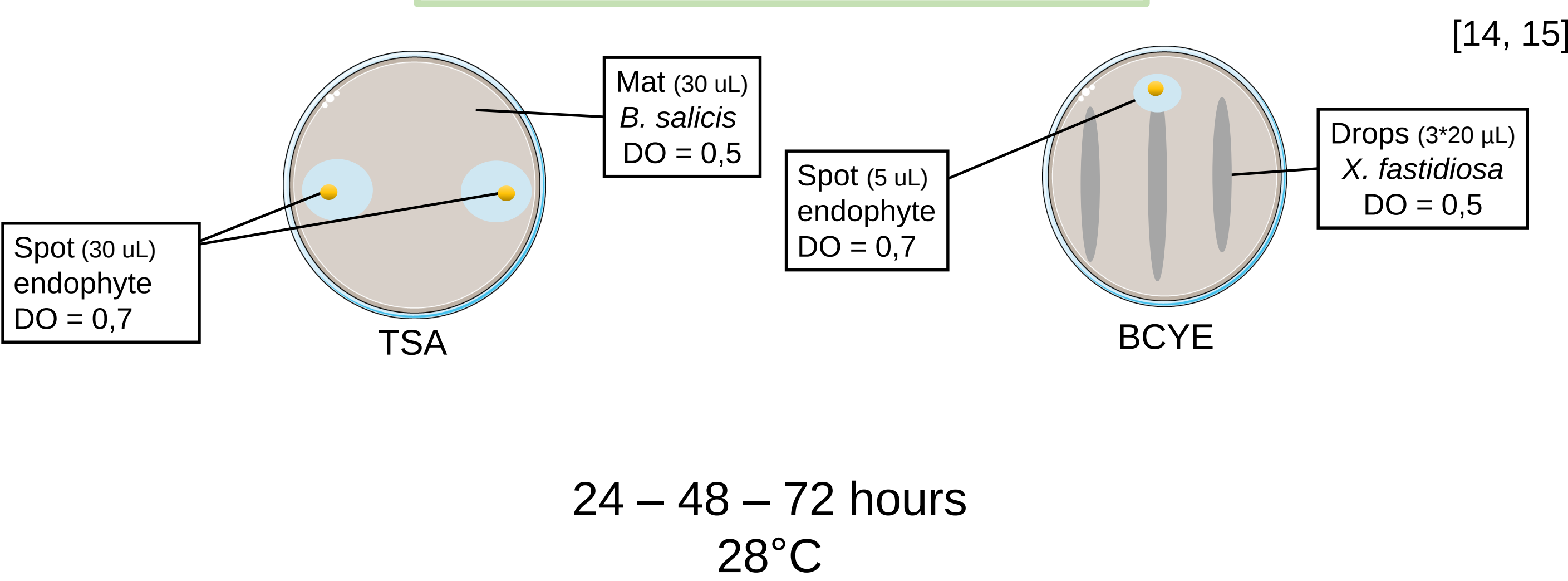
Objective 1 : Characterizing the endophyte population structure and changes for a better understanding of the key parameters influencing it

Objective 2 : Identifying endophytic communities interactions with *B. salicis* and *X. fastidiosa* through *in vitro* and *in vivo* confrontation

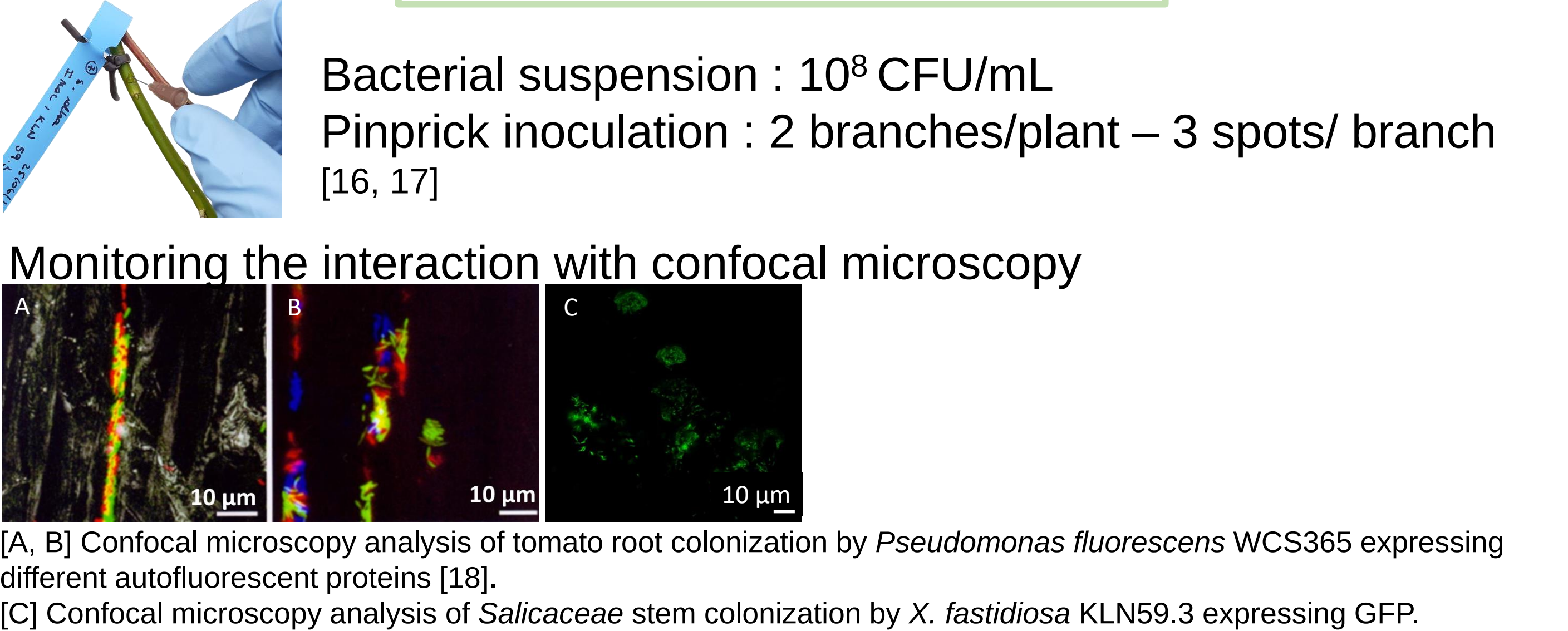
Isolation



In vitro confrontation assay



In vivo confrontation assay



[1] Maes et al. (2009), *Environmental Microbiology*, 11(6), 1453-1462
[2] Janse & Obradovic (2010), *Journal of Plant Pathology*, 92(1), 35-48
[3] Purcell (1974) *American Journal of Enology and Viticulture*, 25(3), 162-167.
[4] Purcell & Saunders (1999), *Plant disease*, 83(9), 825-830.
[5] Khare et al. (2018), *Frontiers in Microbiology*, 9(2732)
[6] Papik et al., (2020), *Biotechnology Advances*, 44(2020), 107614
[7] Reinhold-Hurek & Hurek (2011), *Current Opinion in Plant Biology*, 14, 435-443
[8] Sanchez-Caniarez et al. (2017), *Current Opinion in Microbiology*, 38, 188-196
[9] Hardoim et al. (2008), *Trends in Microbiology*, 16(10), 463-471
[10] Liu et al. (2017), *Frontiers in Microbiology*, 8:2552
[11] Alexou & Peuke (2012), Frans J.M. Maathuis (ed.), *Plant Mineral Nutrients: Methods and Protocols*, Methods in Molecular Biology, vol. 953, chap. 13, 195-207
[12] Weisburg et al (1991), *Journal of Bacteriology*, 173(2), 697-703
[13] Walters et al. (2015), *mSystems*, 11(1), 1-10
[14] Zicca et al. (2020), *Microbiological Research*, 236(2020)
[15] Araujo et al. (2002), *Applied and Environmental Microbiology*, 68(10), 4906-4914
[16] Hill & Purcell (1995), *Phytopathology*, 85(2), 209-212.
[17] Almeida et al. (2001), *Plant Disease*, 85, 382-386
[18] Bloemberg et al. (2000), *MPMI*, 13(11), 1170-1176