

Supplementary Video Legends

Supplementary Video 1. Cross sections from a phase contrast X-ray micro-CT scan of *Solanum lycopersicum* roots 5-days post inoculation (DPI) with *F. oxysporum*. The movie shows progressive slices through the infected root tissue, revealing fungal colonization patterns and the formation of air-filled spaces associated with fungal proliferation. Note that bright (white) areas correspond to fungal structures while black regions correspond to air-filled spaces. The visualization corresponds to the structures described in Figure 1. Images were acquired at the SYRMEP beamline at Elettra synchrotron using propagation-based phase-contrast imaging.

Supplementary Video 2. Three-dimensional rotational movie of *F. oxysporum* appressoria-like structures (ALS) and needle-shaped invasive hyphae (IH) penetrating a cellophane membrane. Three-dimensional rotational movie of *F. oxysporum* hyphae expressing three copies of the cytoplasmic fluorophore Fo-mClover3 (green) imaged directly on a cellophane membrane after 3 days of growth on MM. Note the enlarged bulbous appressoria-like structures (ALS) and thinner needle-shaped invasive hyphae (IH) stemming out of them. Imaging was performed on a Stellaris 5 inverted scanning confocal microscope equipped with a HC PL APO 63x/1,40-0,60 oil objective and a White Light Laser.