

**37.134 ARABIDOPSIS THALIANA NON-HOST RESISTANCE RESPONSES TO THE COFFEE ORANGE RUST FUNGUS HEMILEIA VASTATRIX.** M.C. Silva, H.G. Azinheira, L. Bernier, C. Medeira, A-S Petitot, I. Maia, M. Nicole and D. Fernandez. *Centro de Investigação das Ferrugens do Cafeeiro/Instituto de Investigação Científica Tropical, Quinta do Marquês, 2784-505 Oeiras, Portugal. Email: mariaceudasilva@gmail.com*

The plant rusts, caused by Basidiomycetes, are among the most destructive plant diseases, especially of economically important crops such as Arabica coffee (*Coffea arabica* L.). The model plant *Arabidopsis thaliana* is naturally immune to the rust pathogens, but the mechanisms underpinning non-host disease resistance remain relatively unexplored. Leaf rust of coffee, caused by *Hemileia vastatrix*, is of central economic significance, and thus insights into the expression of non-host resistance against this pathogen may be of particular importance. The non-host pathosystem involving *A. thaliana* (Col-0) and *H. vastatrix* (race II) was characterized at the cytological and molecular levels. By 24 h after inoculation, 67% of *H. vastatrix* urediospores had germinated on the upper epidermis of the leaves and 46% had differentiated appressoria on stomata. The majority (80%) of appressoria penetrated but failed to successfully form haustoria. The hypersensitive response was detected, particularly in the stomatal cells. Cell wall modifications, such as deposition of phenolic-like compounds and callose seemed to act as a barrier preventing haustoria formation. The *A. thaliana* molecular resistance responses to the rust were investigated by monitoring the relative expression of a variety of defence genes including WRKY, pathogenesis-related (PR), defensins, lipoxygenases and peroxidase genes. Inoculation of *H. vastatrix* on to *Arabidopsis* triggered the rapid induction of defence genes. Results were compared to the *A. thaliana* race-specific resistance responses when challenged with *Pseudomonas syringae* strain DC3000 carrying the avrRpt2 gene. This provided significant new insight into the expression of non-host resistance.