

Charikleia Schoina,
Klaas Bouwmeester &
Francine Govers

Laboratory of
Phytopathology,
Wageningen University,
Droevendaalsesteeg 1,
6708 PB Wageningen,
The Netherlands

An in vitro infection system for studying Phytophthora-host interactions using tomato cell suspensions

One of the most devastating plant diseases worldwide is late blight on potato and tomato caused by the oomycete pathogen *Phytophthora infestans*. During the early biotrophic phase of infection, *Phytophthora* penetrates host tissue and thereafter forms specialized feeding structures called haustoria. Here, effectors produced by the pathogen, are transferred into the host cells to manipulate the host cell machinery thereby suppressing plant defense. Therefore, studying the interface between the host and the pathogen at the early stages

of infection is of great interest. An important drawback when studying the *Phytophthora*-host interaction in leaves is the lack of synchronization of the infection process. For this purpose, a new *in vitro* infection system was established, in which MsK8 tomato cell suspensions were challenged with zoospores of different *Phytophthora* species. Here we show that *P. infestans* infects MsK8 cells in a similar fashion as leaf tissue. In contrast, other *Phytophthora* species that are not pathogenic on tomato could not penetrate the MsK8 cells. The use of this novel infection system allows simplification and synchronization of the infection process, and is expected to provide a more detailed insight into *Phytophthora*-host interaction.