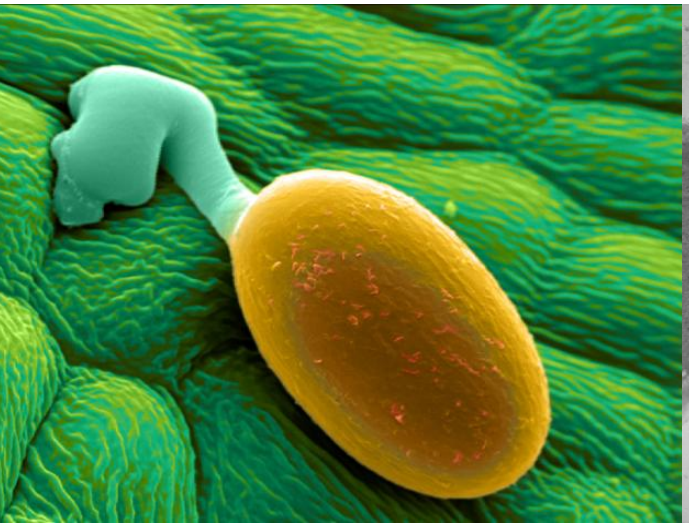
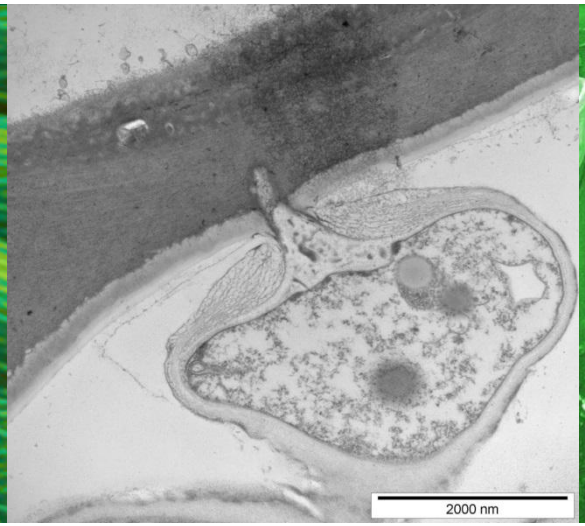
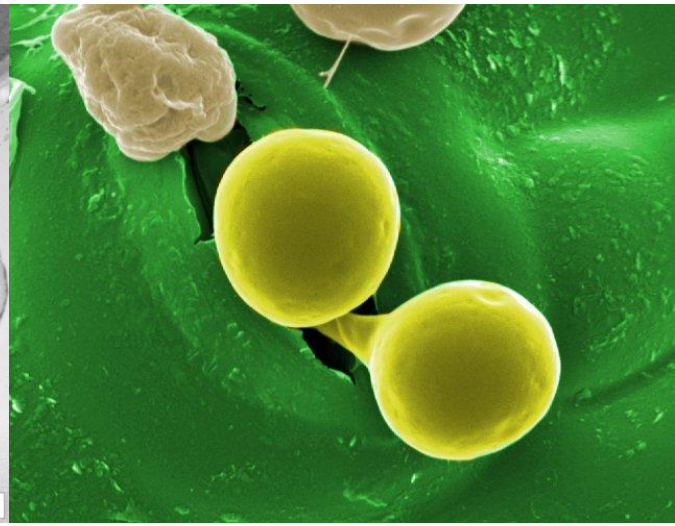
Early events in the infection process and the host-pathogen-interactions of the biotrophic grapevine pathogens downy and powdery mildew







Biotrophic plant pathogens such as Grapevine Downy Mildew (*Plasmopara viticola*) and Powdery Mildew (*Erysiphe necator*) establish a close relationship with their host plant. Both pathogens display specific mechanisms to overcome the preformed barriers on the plant surface and to gain access to living host cells. For nutrient uptake and back-door recruitment of effectors in the host cell haustoria were formed. By means of microscopic analysis the infection process and the first colonization steps of *Plasmopara viticola* and *Erysiphe necator* is shown. Studies of the transcription kinetics of particular genes involved in the defense response reveal the differences between susceptible and resistant grapevine genotypes.

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From science to practice:
A computer based expert system for the targeted control of grapevine diseases



Grapevine Downy Mildew (*Plasmopara viticola*) and Powdery Mildew (*Erysiphe necator*) cause severe losses of quality and yield in vineyards with the traditional European grapevine cultivars. Hence depending on the weather situation the application of fungicides is necessary to save the crop. To reduce the pesticide input in the fields a prognosis system has been developed for a targeted application of the fungicides. The system is based on the biological data of *Plasmopara viticola* and *Erysiphe necator* especially on the relationship between the specific events of the infection cycle and weather conditions. A network of computer based weather stations feeds the system continuously. The system is running since more than 15 years in practice and is currently updated..

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