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Poster Abstract - D.02

FLAVOHAEMOGLOBIN HMPX FROM *ERWINIA CHRYSANTHEMI* CONFERS NITROSATIVE STRESS TOLERANCE AND AFFECTS THE PLANT HYPERSENSITIVE REACTION BY INTERCEPTING NITRIC OXIDE PRODUCED BY THE HOST

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Host cells respond to infection by generating nitric oxide (NO) as a cytotoxic weapon to facilitate killing of invading microbes. Bacterial flavohaemoglobins are well known scavengers of NO and play a crucial role in protecting animal pathogens from nitrosative stress during infection. *Erwinia chrysanthemi*, which causes macerating diseases in a wide variety of plants, possesses a flavohaemoglobin (HmpX) whose function in plant pathogens has remained unclear. Here we show that HmpX consumes NO and prevents inhibition by NO of cell respiration, indicating a role in protection from nitrosative stress. Furthermore, infection of *Saintpaulia ionantha* plants with a HmpX-deficient mutant of *E. chrysanthemi* revealed that the lack of NO scavenging activity causes the accumulation of unusually high levels of NO in host tissue and triggers hypersensitive cell death. Introduction of the wild-type *hmpX* gene in an incompatible strain of *Pseudomonas syringae* had a dramatic effect on the hypersensitive cell death in soybean cell suspensions, and markedly reduced the development of macroscopic symptoms in *Arabidopsis thaliana* plants. These observations indicate that HmpX not only protects against nitrosative stress but also attenuates host hypersensitive reaction during infection by intercepting NO produced by the plant for the execution of the hypersensitive cell death program.