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Regulation of effector gene expression as concerted waves in *Leptosphaeria maculans*: a two-players game involving a chromatin remodeler and a specific transcription factor

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Leptosphaeria maculans is a phytopathogenic fungus responsible for oilseed rape stem canker that displays a particularly complex lifecycle. Different sets of effector-genes are expressed at each stage of oilseed rape infection. Repeat-rich regions of *L. maculans* genome are enriched in effector-genes specifically expressed during biotrophic stages of infection. These regions show a repressed chromatin state during mycelial growth *in vitro*. We showed the importance of chromatin remodeling in the control of effector-genes expression. As such, the repressive histone modification H3K9me3 deposited by the methyltransferase KMT1, is involved in the regulation of these genes not expressed *in vitro* but highly expressed during infection. However, inactivation of *KMT1* did not de-repress the expression of effector-genes *in vitro* at the same level as observed during infection, suggesting additional actors involved, such as transcription factor(s) (TF). We investigated the involvement of Pf2, a fungal specific Zn₂Cys₆ TF, in the control of effector-gene expression. Deletion of *LmPf2* lead to a non-pathogenic mutant. Its over-expression was not sufficient to express effector-genes *in vitro*. In contrast, its over-expression in a *Kmt1* mutant background induced the expression of effector-genes *in vitro* to the same level as during plant infection. These results demonstrated for the first time a dual control of effector-gene expression involving a chromatin remodeler and an infection specific TF.