

THE XANTHOMONAS CAMPESTRIS TYPE III EFFECTOR XOPAC TRIGGERS VASCULAR IMMUNITY IN ARABIDOPSIS

> Close this window

Abstract type : Oral presentation

Session :

Submitted by : Laurent NOEL

Authors and Speakers : Laurent NOËL

Information about other authors :

Guy E.¹, Chabannes M.¹, Hajri A.², Genissel A.¹, David P.², Boureau T.², Poussier S.², Arlat M.¹ and Noël LD¹.

¹ CNRS-INRA UMR 2594-441, LIPM, Castanet-Tolosan, France.

² INRA UMR 077, PaVé, Beaucauzé, France.

laurent.noel@toulouse.inra.fr

Xanthomonas campestris pv. *campestris* (*Xcc*) is the causal agent of black rot on Brassicaceae and causes disease on crop plants such as cabbage or on the model plant *Arabidopsis*. The *xopAC* gene encodes a type III effector which is responsible for avirulence on *Arabidopsis* ecotype Col-0 exclusively when *Xcc* is inoculated in the leaf vasculature (1). PCRs and dot-blot hybridizations performed on a large collection of plant pathogenic bacteria revealed that *avrAC* is specific to *Xc*. The analysis of more than 50 *Xcc* strains reveals that *avrAC* displays a very low allelic diversity and belongs to the *Xcc* variable effectome. Moreover, the presence of *avrAC* is tightly correlated with an increase in *Xcc* aggressiveness on susceptible *Arabidopsis*. This correlation was experimentally confirmed by reverse genetic in several *Xcc* strains. In addition, *xopAC* is responsive for the appearance of necrotic lesions on nonhost pepper plants. We show that the "Leucine-Rich Repeat" (LRR) and "Filamentation induced by cAMP" (Fic) domains of XopAC are both required for avirulence on resistant *Arabidopsis* and necrosis on pepper. Interestingly, the Fic domains of the VopS and IbpA virulence factors from animal pathogens were recently shown to mediate protein adenylation, a yet unknown protein posttranslational modification in plants (2,3). Strategies developed to dissect *avrAC* functions *in planta* and to study plant vascular immunity will be presented.

References :

1. Xu *et al.* 2008 J. Bact 190:343-355
2. Worby *et al.* 2009 Mol. Cell 34:93-103
3. Yarbrough *et al.* 2009 Science 323:269-272

Keywords :

Xanthomonas, effectome, Arabidopsis, pathogenicity, vascular immunity