UNIVERSITÄT BONN

Die Pflanzenwissenschaftlichen Institute

Einladung zum Pflanzenwissenschaftlichen Kolloquium

Freitag, den 30. Januar 2026, 12 c.t.

Nussallee 9, Hörsaal X

Referent: Prof. Dr. Frank L. W. Takken

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Thema: „Identification of host targets of Fusarium oxysporum effectors provides insight in disease resistance and susceptibility.“

Fusarium oxysporum causes Fusarium wilt disease in many agricultural important crops. To understand how the fungus manipulates its hosts we identify the targets of its Secreted in Xylem (SIX) effectors. Previously we reported that SIX3 (Avr2) targets PAMP triggered immunity by compromising the function of BIK1 (Blekemolen *et al.*, 2023 MPP). SIX5 modulates the size exclusion limit of plasmodesmata allowing symplastic spread of SIX proteins such as SIX8 (Talbi *et al.,* 2023 *MPP*; 37, 304, Blekemolen *et al.*, 2022 *FPS*;13). The broadly conserved SIX8 effector targets specific members of the Topless (TPL) family (Aalders *et al.*, 2024 *PBJ*; 22, 248). Tomato *tpl1/tpl2* mutants and Arabidopsis *thaliana tpr1/tpl* double mutants show resistance to Fusarium wilt, designating *TPLs* as genuine *S* genes. To study SIX8 function, the effector was expressed in Arabidopsis Col-0. The *SIX8* transformants exhibited a temperature-dependent growth phenotype, constitutive *PR1* and *PR2* expression, and local cell death, all indicative for constitutive immune signalling. TPR1 interacts with SNC1, a temperature sensitive NLR-type immune receptor (Zhu *et al.* 2010 *PNAS*; 107, 13960). To test involvement of *TPL, TPR1* and of *SNC1* and SNC1-signalling components Arabidopsis mutants were transformed with *SIX8*. Knockout mutants in *TPL, TPR1, SNC1* and *EDS1* fully reverted the *SIX8* phenotype. These data indicate that SNC1 guards TPL and TPR1 against perturbation by SIX8 provides additional support for their important role in disease resistance and susceptibility. Taken together, the characterisation of SIX effector targets provides novel *R* and *S* genes to control Fusarium wilt disease.

Diskussionsleitung: Prof. Dr. Armin Djamei, INRES – Pflanzenpathologie

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