IN BRIEF

PLANT PATHOGENS

Plant pattern-recognition receptor FLS2 is directed for degradation by the bacterial ubiquitin ligase AvrPtoB

Göhre, V. *et al. Curr. Biol.* **18**, 1824–1832 (2008)

The detection of pathogen-associated molecular patterns by pattern-recognition receptors (PRRs) is the first line of active plant immune defences. Following detection of an epitope, PRRs stimulate a wide range of responses, including induction of defence signalling pathways and alterations in gene expression. PRRs such as FLS2 in *Arabidopsis thaliana* are therefore prime targets for pathogenic subversion. Göhre *et al.* now show that the effector protein AvrPtoB of *Pseudomonas syringae* pv. tomato DC3000 is a ubiquitin ligase that targets FLS2. AvrPtoB interacts with FLS2 and its associated cofactor BAK1, and subsequent polyubiquitination of FLS2 correlates with its loss from the plant membrane. *P. syringae* pv. tomato DC3000 therefore uses the AvrPtoB effector to downregulate FLS2 and thereby promote plant susceptibility to infection.

VIRAL PATHOGENESIS

A highly structured, nuclease-resistant noncoding RNA produced by flaviviruses is required for pathogenicity

Pijlman, G. P. *et al. Cell Host Microbe* **4**, 579–591 (2008)

Multiple roles for viral non-coding RNAs in the interplay between virus and host cells have been discovered in recent years. Now, a unique and highly structured non-coding RNA derived from the 3′-untranslated region of the RNA genome of members of the genus Flavivirus has been identified. This subgenomic RNA, which was named sfRNA (subgenomic flavivirus RNA), is a product of incomplete digestion by the host cell ribonuclease XRN1 (5′–3′ exoribonuclease 1), which is present in cellular processing bodies. The structure of sfRNA is highly conserved among flaviviruses and protects the 3′-untranslated region from nuclease degradation. Surprisingly, using West Nile virus as a model, Pijlman *et al.* found that an intact sfRNA was essential for cytopathicity and viral pathogenesis. However, the mechanism by which sfRNA plays a part in cytopathicity remains to be determined.

INNATE IMMUNITY

An essential role for the antiviral endoribonuclease, RNase-L, in bacterial immunity

Xiao-Ling, Li. *et al. Proc. Natl Acad. Sci. USA* 15 Dec 2008 (doi:10.1073/pnas.0807265105)

Type I interferon (IFN) induction occurs as part of the innate immune response to both viral and bacterial pathogens, and is important for successful resolution of infection. As one of the mediators of IFN antiviral activity, RNase L cleaves single-stranded viral and cellular RNAs. Xiao-Ling *et al.* report that RNase L also functions during the host response to infection by either Gram-negative or Gram-positive bacteria. Following bacterial infection, knockout mice that lacked RNase L (RNase $L^{-/-}$) had significantly increased mortality that was due to defective immune responses and increased bacterial load. In RNase $L^{-/-}$ macrophages, bacterial infection led to diminished induction of proinflammatory cytokines, as well as elevated expression of the endolysosomal protease cathepsin E, which led to impairment in phagosomal clearance of bacteria. As one of the fundamental components of the innate immune response, RNase L could prove to be a useful target for modulating antimicrobial activity.