

## IN BRIEF

## BACTERIAL PATHOGENICITY

The intracellular fate of *Salmonella* depends on the recruitment of kinesin

Boucrot, E. *et al. Science* **308**, 1174–1178 (2005)

*Salmonella enterica* serovar Typhimurium (*S. typhimurium*) replicates in host cells within a *Salmonella*-containing vacuole (SCV). *S. typhimurium* uses a type III secretion system (TTSS) encoded on a pathogenicity island to secrete effector proteins from the SCV into host cells. In a recent *Science* paper, Emmanuel Boucrot and colleagues report the results of their investigations into the specific role of one of these secreted effector proteins, SifA. Using a yeast two-hybrid screen, a host-cell SifA-binding protein named SKIP was identified. Analysis of the SifA–SKIP interaction in cultured cells showed that SKIP is recruited to the SCV in a SifA-dependent manner. Further work revealed that the recruitment of the molecular motor kinesin to SCVs requires a functional TTSS and is negatively regulated by SifA through SKIP.

## VACCINES

Protection against *P. aeruginosa* with an adenovirus vector containing an OprF epitope in the capsid

Worgall, S. *et al. J. Clin. Invest.* **115**, 1281–1289 (2005)

Infections with *Pseudomonas aeruginosa* are particularly prevalent in cystic fibrosis patients and, as yet, no vaccine is available. In the latest issue of the *Journal of Clinical Investigation*, Worgall *et al.* report promising results in mice with a novel adenovirus-based anti-*P. aeruginosa* vaccine. The vaccine was constructed by incorporating immunogenic epitopes from the surface-exposed *P. aeruginosa* outer-membrane protein OprF into the capsid of replication-deficient adenovirus vectors. After assessing the humoral response, a candidate vaccine that contains OprF epitope 8 was taken forward and was shown to stimulate a detectable serum anti-OprF and anti-*P. aeruginosa* response and to induce protection against lethal pulmonary challenge with *P. aeruginosa*. Additionally, the anti-*P. aeruginosa* immune response could be boosted by repeated administration of the vaccine.

## FUNGAL PHYSIOLOGY

*Leptosphaeria* rhodopsin: bacteriorhodopsin-like proton pump from a eukaryote

Waschuk, S. *et al. Proc. Natl Acad. Sci USA* **102**, 6879–6883 (2005)

The retinal-containing membrane protein bacteriorhodopsin was first identified in Archaea more than 30 years ago. The hypothesis that this form of light-driven proton pumping was confined to the Archaea was disproved by some of the first environmental genomic surveys, which identified a similar light-driven proton pump, proteorhodopsin, in marine bacteria. Now, researchers have obtained direct experimental evidence that the rhodopsin present in the fungus *Leptosphaeria maculans*, the causative agent of blackleg in canola, a rapeseed cultivar, can act as a light-driven proton pump. Interestingly, Waschuk and colleagues comment that the physiological function of the rhodopsin in *L. maculans* might not be bioenergetic, and that light-induced acidification of some cell compartments could be used to activate certain biochemical responses.