IN BRIEF

ECOLOGY

Ubiquity of biological ice nucleators in snowfall

Christner, B. C. *et al. Science* **319**, 1215 (2008)

Some plant pathogenic bacteria synthesize ice-nucleation proteins that catalyse the formation of ice crystals, which can damage plant cells. Ice-nucleating phytopathogens plunder damaged plant cells for growth substrates, often causing economically devastating crop losses. Now, the same bacteria have been implicated in the formation of rain drops and ice nuclei in clouds, according to a report published in *Science*. At temperatures higher than –40°C, miniscule particles, such as minerals, can function as catalysts for ice nucleation. Christner *et al*. analysed snow samples that were collected from different geographical locations, including Antarctica and France, and detected ice-nucleating bacteria in all samples tested. The authors propose that ice-nucleating bacteria are present in clouds, which might serve to disperse bacteria.

SYMBIOSIS

Cell invasion and matricide during *Photorhabdus luminescens* transmission by *Heterorhabditis bacteriophora* nematodes

Ciche, T. A. *et al. Appl. Environ. Microbiol.* **154**, 593–607 (2008)

Photorhabdus spp. are insect pathogens that inhabit the gut of the nematode *Heterorhabditis bacteriophor*a. This nematode infects insects and releases symbiotic bacteria into the haemocoel. A bacteria-induced septicaemia ensues that kills the insect, thereby releasing nutrients for both the bacteria and the nematode to use. The nematode–bacteria relationship is required for insect parasitism, and therefore this system provides a useful model in which to dissect symbiotic relationships. The nematode is transparent, so Ciche *et al*. were able to visualize green-fluorescent-protein-labelled bacteria throughout the nematode lifecycle. They found that symbiotic bacteria are maternally transmitted by a multistep process that involves complete expulsion of bacteria from the infective juvenile stage, followed by reinfection and colonization of the maternal intestine and the infective juvenile offspring, which develop inside the maternal nematode and are released by matricide.

SOCIOMICROBIOLOGY

The evolution of quorum sensing in bacterial biofilms

Nadell, C. D. *et al. PLoS Biol.* **6**, e14 (2008)

Biofilms are surface-bound aggregates of bacteria that are held together by a matrix of extracellular polysaccharides (EPSs). Quorum sensing often controls the synthesis and secretion of EPSs, but although some bacteria switch on EPS production at high cell densities in biofilms, other bacteria switch it off. Nadell *et al*. used a model that simulates the growth of a simple biofilm to simulate competition between strains that had different EPSs and quorum-sensing phenotypes. This revealed that switching quorum sensing and EPSs off allows bacteria such as *Pseudomonas aeruginosa* to compete better in environments in which competition is prolonged and intense, such as chronic infections, whereas switching off quorum sensing and EPSs at high cell densities enables bacteria such as *Vibrio cholerae* to proliferate before dispersal, which occurs, for example, during acute infections.

ERRATUM

Sociomicrobiology: The evolution of quorum sensing in bacterial biofilms

Nature Reviews Microbiology **6**, 257 (2008)

In this In Brief, we incorrectly stated that switching EPS production off at high cell density allows bacteria such as *Pseudomonas aeruginosa* to compete better in environments in which local competition is prolonged and intense, such as chronic infections. We should have stated that *P. aeruginosa* switches EPS production on at high cell density. We apologize to our readers for any confusion caused.