

## IN BRIEF

**PARASITOLOGY**

Blood meal-derived heme decreases ROS levels in the midgut of *Aedes aegypti* and allows proliferation of intestinal microbiota

Oliviera, J. H. M. *et al. PLoS Pathog.* **7**, e1001320 (2011)

The midgut of mosquitoes produces reactive oxygen species (ROS) that reduce the number of bacteria present. However, a new study now finds that ROS levels are reduced after the mosquito takes a blood meal owing to the presence of haem, leading to an increase in the number of bacteria in the midgut. Feeding purified haeme to mosquitoes had a similar effect on the level of ROS and the number of intestinal bacteria. Inhibition of protein kinase C prevented the haem-dependent decrease in ROS levels, providing insight into potential pathways of ROS regulation. The authors speculate that the downregulation of ROS protects the mosquito from the oxidative effects of haem.

**ANTIMICROBIALS**

Identification of a bioactive 51-membered macrolide complex by activation of a silent polyketide synthase in *Streptomyces ambofaciens*

Laureti, L. *et al. Proc. Natl Acad. Sci. USA* 28 Mar 2011 (10.1073/pnas.1019077108)

Macrolides are a family of compounds that contain a macrolide ring, and include the well-known antibiotics erythromycin and azithromycin. One problem with the discovery of new macrolides produced by bacteria is that not all macrolides are produced under laboratory conditions. Laureti *et al.* detected a type I modular polyketide synthetase gene cluster in the genome of *Streptomyces ambofaciens* ATCC 23877 that was not expressed under laboratory conditions. However, they found that the ectopic expression of a potential transcriptional regulator (which is part of this cluster) induced the expression of the gene cluster and led to the production of four 51-membered glycosylated macrolides, which they named stambomycin A–D. These compounds have structures that probably involve “unprecedented biosynthetic biochemistry” and have antiproliferative effects on human cancer cell lines. Ectopic expression of putative activators in potential polyketide synthetase gene clusters could be a useful strategy for the identification of medically useful compounds.

**PUBLIC HEALTH**

Phenotypic evidence of emerging ivermectin resistance in *Onchocerca volvulus*

Osei-Atweneboana, M. Y. *et al. PLoS Negl. Trop. Dis.* **5**, e998 (2011)

Ivermectin is one of the main drugs used in the effort to eradicate river blindness, which is caused by the filarial nematode *Onchocerca volvulus*. This new report now finds that in some communities in Ghana the nematodes are less responsive to the drug, leading to higher than expected levels of microfilariae (the stage in the parasite life cycle that is specifically affected by the drug) in patients after treatment. The researchers divided the nematodes into three groups on the basis of their response to the drug: full responders, partial responders and non-responders. Although no additional cases of blindness have been reported in the communities infected with partial responders and non-responders, the increased risk of spread is a serious cause for concern.