IN BRIEF

MICROBIOME

Bile provides key to CDI resistance

To investigate the link between antibiotic treatment and susceptibility to intestinal *Clostridium difficile* infection (CDI), Buffie *et al.* treated mice with different antibiotics and correlated the observed differences in intestinal bacterial composition with susceptibility to CDI. This analysis revealed that the presence of *Clostridium scindens* was indicative of resistance to CDI, and adoptive transfer of this bacterium was sufficient to increase resistance to CDI. Notably, the presence of *C. scindens* also correlated with resistance to CDI in patients undergoing allogeneic haematopoietic stem-cell transplantation, who display alterations in their gut microbiome as a result of chemo- and radiotherapy and antibiotic usage during transplantation. *C. scindens*-mediated resistance was associated with the expression of operons involved in secondary bile acid biosynthesis and was dependent on the presence of bile in the intestine, suggesting that *C. scindens* uses host-derived bile to synthesize compounds that inhibit *C. difficile* growth.

ORIGINAL RESEARCH PAPER Buffie, C. G. *et al.* Precision microbiome reconstitution restores bile acid mediated resistance to *Clostridium difficile*. *Nature* http://dx.doi.org/10.1038/nature13828 (2014)

PARASITE BIOLOGY

Early social behaviour in *T. b. brucei*

The causative agent of sleeping sickness in humans, *Trypanosome brucei brucei*, has been shown to exhibit social motility, or coordinated migration, on semi-solid surfaces. Imhof *et al.* used a series of mutants to investigate when *T. b. brucei* displays social motility during its developmental cycle *in vivo*. Within its tstese fly vector *T. b. brucei* must migrate twice, first during the early procyclic stage from the midgut lumen to the ectoperitrophic space and second, during the late procyclic stage from the ectoperitrophic space into the salivary glands. The authors found that social motility was displayed only during the early procyclic stages, in the first week after uptake by the tsetse fly.

ORIGINAL RESEARCH PAPER Imhof, S. *et al.* Social motility of African trypanosomes is a property of a distinct life-cycle stage that occurs early in tsetse fly transmission. *PLoS Pathog.* http://dx.doi.org/10.1371/journal.ppat.1004493 (2014)

FUNGAL PATHOGENICITY

Role for *TLO*s in fungal virulence

The human fungal pathogen *Candida albicans* contain 15 telomeric ORF (*TLO*) genes that encode proteins with homology to the Med2 component of the mediator complex, which functions in transcriptional regulation. Using the related fungal pathogen *Candida dubliniensis* as a model, Haran *et al.* investigated the function of the *TLO* genes. *C. dubliniensis* encodes two *TLO*s, and the authors found that a mutant strain in which both *TLO1* and *TLO2* had been deleted had defects in a range of different virulence traits, including hyphal growth, and this was reflected in altered expression of many genes known to be important for pathogenicity. Independent complementation with either *TLO1* or *TLO2* revealed that although there is an overlap in regulatory capacity, each gene also regulates a distinct set of target genes. The authors propose that the expansion of the *TLO* family in *C. albicans* could have contributed to its ability to adapt rapidly to environmental fluctuations and colonise diverse niches.

ORIGINAL RESEARCH PAPER Haran, J. *et al.* Telomeric ORFs (*TLO*s) in *Candida* spp. encode mediator subunits that regulate distinct virulence traits. *PLoS Genet.* http://dx.doi.org/10.1371/journal.pgen.1004658 (2014)