IN BRIEF

BACTERIAL GENOMICS

Regulators or by-products?

The transcription of antisense RNAs (asRNAs) has been shown to be widespread in bacterial genomes, but whether these asRNAs have a regulatory role like other non-coding RNAs has been unclear. Ochman and colleagues postulated that functional elements are likely to be conserved between genomes, and thus compared the genome-wide expression of asRNAs in two enteric bacteria, *Escherichia coli* and *Salmonella enterica* subsp. *enterica* serovar Typhimurium. asRNAs were highly expressed in both organisms and were mostly expressed under the control of the σ^{70} transcription factor. However, fewer than 3% of asRNAs were highly expressed by both bacteria. Moreover, unlike the situation with mRNA promoters, there was no evidence of sequence conservation in asRNA promoters between *E. coli* and S. Typhimurium or even between two *Escherichia* spp. or two strains of *E. coli*. Thus, the authors concluded that most asRNAs are not likely to be functional.

ORIGINAL RESEARCH PAPER Raghavan, R. *et al.* Antisense transcription is pervasive but rarely conserved in enteric bacteria. *mBio* **3**, e00156-12 (2012)

PARASITE BIOLOGY

(Not) helping *Plasmodium* break in

An integral step in the establishment of malarial infection is invasion of the host erythrocyte by the parasite. Previous work had reported that presenilin-like signal peptide peptidase (SPP) has a role during invasion by *Plasmodium falciparum*, targeting the cytoskeletal protein Band 3 on the erythrocyte surface; this, surprisingly, implied that, although SPP is an ER protein, it is secreted during invasion. However, a separate study found that SPP has a role in growth, not invasion, of *Plasmodium berghei*. Here, Marapana *et al.* sought to resolve the precise contribution of SPP during the establishment of infection. Using fluorescence imaging, they found that SPP resides in the ER and does not relocalize to the parasite cell surface during invasion. Importantly, blocking SPP with a range of inhibitors had no effect on invasion; however, it did interfere with parasite development, which suggests that the protein could be targeted for therapeutic purposes.

ORIGINAL RESEARCH PAPER Marapana, D. S. *et al.* Malaria parasite signal peptide peptidase is an ER-resident protease required for growth but not for invasion. *Traffic* 23 Aug 2012 (doi:10.1111/j.1600-0854.2012.01402.x)

ENVIRONMENTAL MICROBIOLOGY

Re-evaluating the abundance of microorganisms

There are significantly fewer microorganisms on Earth than previously thought, according to a recent study. A report in 1998 had estimated that there are 35.5×10^{29} bacteria and archaea in sub-sea floor sediments. However, this study focused on coastal regions, and other studies measuring the abundance of microorganisms in more nutrient-deprived areas, such as open-ocean gyres, had reported much lower numbers. To address this discrepancy, Kallmeyer *et al.* compiled data from both nutrient-rich coastal regions and nutrient-deprived areas, and estimated that there are 2.9×10^{29} cells in the sub-sea floor sediment; this is similar to the estimated number of microorganisms in sea water (1.2×10^{29}) and soil (2.6×10^{29}). Together, these measurements suggest that, although the number is still vast, there are 50–78% fewer bacteria and archaea on Earth than previously thought.

ORIGINAL RESEARCH PAPER Kallmeyer, J. *et al.* Global distribution of microbial abundance and biomass in subseafloor sediment. *Proc. Natl Acad. Sci USA* 27 Aug 2012 (doi:10.1073/pnas.1203849109)