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One of the most exciting developments in molecular biology in recent years was the discovery of RNA interference (RNAi), which earned Andrew Fire and Craig Mello the 2006 Nobel Prize in Physiology or Medicine. During RNAi, which protects eukaryotic genomes against transposable elements and RNA viruses, long, double-stranded RNAs are processed into 21–22 base pair small interfering RNAs, which then undergo further processing and, ultimately, form part of a complex that binds to target mRNAs and marks them for degradation.

In a Progress article on page 181, Sorek, Kunin and Hugenholtz discuss exciting new research which indicates that bacteria and archaea might also possess an RNAi-like system. The article focuses on the recently discovered clustered, regularly interspaced short palindromic repeats (CRISPRs), which comprise short direct repeats that are interspersed by non-repetitive spacer sequences. The spacers have been found to contain plasmid- or phage-derived DNA, and it has been shown that, in response to phage infection, bacteria integrate new spacers that are derived from phage genomic sequences, which results in CRISPR-mediated phage resistance. Sorek and colleagues discuss these results, propose a model for CRISPR activity and outline some of the possible applications for this system, which could include boosting the immunity of industrially important bacteria against viruses and selective bacterial-gene silencing.

Finally, some sad news for the journal. After 5 years, our Chief Editor David O'Connell has decided to leave the journal to return to his native Ireland full-time. As we are sure those of you who met David at conferences over the years will agree, he was a great ambassador for the journal and for microbiology in general. We wish him well in his new position.



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