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IN BRIEF

EVOLUTION

Evolution of olfactory receptors in mammals

Olfactory receptors (ORs) detect odorants and are vital for the survival of most mammals. In this study, the researchers developed a new phylogeny-based method to analyse >10,000 OR genes from 13 placental mammals to determine the extent of OR variability across species. Some of the 781 orthologous gene groups were expanded in a lineage-specific manner and, interestingly, only 3 of these gene groups were conserved across species. Of the 13 species, African elephants have the largest repertoire of functional OR genes (~2,000 genes) — 5 times as many as those of humans.

ORIGINAL RESEARCH PAPER Niimura, Y., Matsui, A. & Touhara, K. Extreme expansion of the olfactory receptor gene repertoire in African elephants and evolutionary dynamics of orthologous gene groups in 13 placental mammals. *Genome Res.* http://dx.doi.org/10.1101/gr.169532.113 (2014)

PATHOGEN GENETICS

Cutting out HIV

Current retroviral therapies for HIV are based on attenuating the virus; however, residual latent forms can cause reactivation, and low-level viral protein production is associated with multiple co-morbidities. Using CRISPR–Cas9 (clustered regularly interspaced short palindromic repeat–CRISPR-associated 9) genome editing technology, Hu *et al.* were able to completely remove HIV from the genomes of multiple cell lines. The production of required tools for this method is rapid, which suggests that personalized therapies for the treatment of HIV are feasible.

ORIGINAL RESEARCH PAPER Hu, W. *et al.* RNA-directed gene editing specifically eradicates latent and prevents new HIV-1 infection. *Proc. Natl Acad. Sci. USA* http://dx.doi.org/10.1073/pnas.1405186111 (2014)

MODEL ORGANISMS

Sexual conflict in nematodes

A new study in *Caenorhabditis* nematodes has shown that the species barrier is maintained by highly aggressive sperm. Rather than producing infertile offspring as a result of interspecific mating, as observed in other species, interspecific mating in *Caenorhabditis* spp. results in maternal infertility and shortened maternal lifespan. *Caenorhabditis* hermaphrodites mate with more than one male and, during interspecific matings, aggressive sperm displace conspecific sperm and can decrease lifespan or cause death by invading other tissues. This study provides insights into how conflict over reproductive interests can lead to alternative modes of speciation and further the evolution of reproductive traits.

ORIGINAL RESEARCH PAPER Ting, J. J. *et al.* Intense sperm-mediated sexual conflict promotes reproductive isolation in *Caenorhabditis* nematodes. *PLoS Biol.* http://dx.doi.org/10.1371/journal.pbio.1001915 (2014)

EVOLUTIONARY GENETICS

Homing in on anthropoid evolution

To investigate the genetic factors that drove anthropoid primate evolution, researchers have identified 23,949 anthropoid-specific constrained (ASC) regions in the genome. ASC regions are enriched in loci previously associated with brain development, vision and neurotransmission; notably, almost all of these regions are non-coding. In addition, more than half of the ASC regions are linked to transposable elements, thus providing further clues to the evolution of anthropoid-specific traits.

ORIGINAL RESEARCH PAPER del Rosario, R. C. H., Arul Rayan, N. & Prabhakar, S. Noncoding origins of anthropoid traits and a new null model of transposon functionalization. *Genome Res.* http://dx.doi.org/10.1101/gr.168963.113 (2014)