

## Domesticated, transposon-derived cellular genes

### Research project summary

The emergence of new genes and functions is of central importance to the evolution of species, but the creation of new genes by recycling of genetic material from selfish transposons is incompletely understood. DNA transposons carry an attractive and elaborate enzymatic machinery as well as DNA components that have been exapted by the host genome via an evolutionary process referred to as molecular “domestication”, by which a transposon-derived coding sequence gives rise to a functional host gene. For example, one particular copy of the transposase gene of the ancient Hsmar1 human transposon has been under selection. This transposase coding region is part of the SETMAR gene, in which a histone methyltransferase SET domain is fused to an Hsmar1 transposase domain. SETMAR retains its ability to bind to transposon sequences *in vitro*, and we are currently investigating the cellular function of this gene by integrated genomic and transcriptomic approaches.