IN BRIEF

MOBILE ELEMENTS

L1 retrotransposition occurs mainly in embryogenesis and creates somatic mosaicism

Kano, H. *et al. Genes Dev.* **23**, 1303–1312 (2009)

This paper overturns the view that most L1 retrotransposition occurs in the germ line. Using mice and rats that are transgenic for mouse and human L1 elements under the control of their endogenous promoters, the authors show that, although L1 expression occurs in the germ line, L1 RNAs are also abundant in embryos that do not inherit the coding transgene. Furthermore, they show that most *de novo* somatic integration of L1 RNA occurs during development, from preimplantation to adulthood, and they speculate about the disease implications of this mosaicism.

EPIGENETICS

Epigenetic temporal control of mouse Hox genes *in vivo*

Soshnikova, N. & Duboule, D. *Science* **234**, 1320–1323 (2009)

Precise timing of Hox gene activation is essential for vertebrate body patterning. Genes are expressed sequentially across Hox clusters and chromatin modification is implicated in Hox regulation, but the mechanism of the Hox 'clock' is unclear. Soshnikova and Duboule reveal that during mouse tail bud development there is dynamic progression of activating chromatin marks across the *Hoxd* cluster, which might form the basis for temporal control *in vivo*. The timing of the activation also depended on the genes being in a contiguous cluster.

GENOME INSTABILITY

A mechanism linking extra centrosomes to chromosomal instability

Ganem, N. J. *et al. Nature* 7 Jun 2009 (doi:10.1038/nature08136)

This study provides the first evidence that extra centrosomes can drive chromosomal instability, suggesting that this mechanism may be important in cancer. The authors generated cells with multiple centrosomes by overexpressing PLK4, a kinase that regulates centrosome replication. Centrosome amplification forced the cells to pass through a multipolar intermediate during replication, in which single kinetochores are attached to microtubules that originate from different poles of the cell. This leads to an increase in lagging chromosomes and chromosomal missegregation at anaphase.

TECHNOLOGY

Doxycycline-dependent photoactivated gene expression in eukaryotic systems

Cambridge, S. B. *et al. Nature Methods* 7 Jun 2009 (doi:10.1038/nmeth.1340)

The authors describe a method for conditional transgene expression that can be used over a range of spatial scales — from single cells to whole organisms. They developed two reversibly inhibited, photoactivatable doxycycline derivatives for use with the Tet-on system, in which expression of the target gene is induced by the binding of a tetracycline-sensitive transactivator. These derivatives can be activated by ultraviolet or two-photon irradiation, allowing inducible gene expression in various systems, including mouse brain cultures, developing embryos and *Xenopus laevis* tadpoles.