

IN BRIEF

GENE REGULATION

Prediction of mammalian microRNA targets.

Lewis, B. P., Shih, I.-h. *et al. Cell* **115**, 787–798 (2003)

MicroRNAs (miRNAs) are short RNA molecules that regulate developmental processes by binding to complementary mRNAs and preventing their translation. The targets of vertebrate miRNAs are unknown but the authors of this paper have developed an algorithm to identify them on the basis of complementarity between the 5' region of a miRNA and its putative target. They identify 400 target genes with a broad range of functions, most of which were supported by experimental evaluation.

DEVELOPMENT

Notch activity acts as a sensor for extracellular calcium during vertebrate left–right determination.

Raya, Á., Kawakami, Y., Rodríguez-Esteban, C. *et al. Nature* **427**, 121–128 (2004)

The asymmetric left–right location of some vertebrate organs, such as the heart, results from the biased expression of certain genes (notably *Nodal*) on the left side of the early embryo. Using both mathematical modelling and experimental manipulation of the chick, the authors have established that the transient accumulation of extracellular calcium causes the activation of *Notch* on the left side of the embryo, which in turn causes the asymmetric expression of *Nodal*.

PLANT DEVELOPMENT

Vernalization in *Arabidopsis thaliana* is mediated by the PHD finger protein VIN3.

Sung, S. & Amasino, R. M. *Nature* **427**, 159–164 (2004)

Vernalization requires epigenetic silencing of *FLC* by histone methylation.

Bastow, R. *et al. Nature* **427**, 164–167 (2004)

Some plants can only flower after a spell of cold — a process called vernalization. Two papers now report that the silencing of *FLC* (*FLOWERING LOCUS C*), which is required to promote flowering, is the result of changes in histone proteins at this locus and that these changes are mediated by the VERNALIZATION proteins VRN1 and VRN2 (Bastow and colleagues), and VRN3 (Sung and Amasino).

CONSERVATION GENETICS

Evidence for reproductive isolation between cave bear populations.

Hofreiter, M. *et al. Curr. Biol.* **14**, 40–43 (2004)

Speciation — defined as reproductive isolation — is often tricky to prove (see the review by Wu and Ting on p114), particularly if the species in question are extinct. However, by studying both fossils and mtDNA sequences, Hofreiter *et al.* have established that two separate populations of cave bear existed in Europe during the last ice age.

GENE REGULATION

Pub med: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=14697198&dopt=Abstract