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URLs

IN BRIEF

DEVELOPMENT

Paternal indirect genetic effects on offspring viability and the benefits of polyandry.

García-González, F. & Simmons, L. W. *Curr. Biol.* **17**, 32–36 (2007)

Polyandry is thought to increase the reproductive success of females by allowing them to select male genotypes that increase offspring viability, or to avoid genetic incompatibilities. These authors assessed both paternity and survival in cricket embryos and showed that, when polyandry occurs, mating with males that sire high-viability embryos also increases the viability of embryos that are sired by other, inferior males. This indicates that indirect genetic effects occur among males that mate with the same female, which is likely to contribute to the benefits of polyandry.

MICROBIAL GENETICS

A natural genetic code expansion cassette enables transmissible biosynthesis and genetic encoding of pyrrolysine.

Longstaff, D. G. *et al. Proc. Natl Acad. Sci. USA* **104**, 1021–1026 (2007)

The archaeon *Methanosarcina acetivorans* has added pyrrolysine to its genetic code by expressing a tRNA that converts UAG into a pyrrolysine codon. The authors show that genes that encode members of the pyrrolysine synthetic pathway lie in the same cluster as those that encode the tRNA. This cassette turns out to be sufficient to expand the genetic code of *Escherichia coli*, which does not synthesize or encode pyrrolysine. Horizontal transfer of such cassettes might have been important in the evolution of the genetic code.

DEVELOPMENT

Transcription of *bxd* noncoding RNAs promoted by Trithorax represses *Ubx* in *cis* by transcriptional interference.

Petruk, S. *et al. Cell* **127**, 1209–1221 (2006)

Intergenic regions within the *Drosophila melanogaster* Hox cluster produce many non-coding RNAs. The authors show that *Ultrabithorax* (*Ubx*) and several *bithoraxoid* (*bxd*) non-coding RNAs are expressed in mutually exclusive domains within the fly embryo, indicating that, contrary to previous suggestions, *Ubx* is repressed by the *bxd* non-coding RNAs. Their data support a model according to which it is the transcriptional elongation of *bxd* non-coding RNAs, mediated by Trithorax TAC1 complex, that represses *Ubx* transcription.

EPIGENETICS

H3K9 methylation and RNA interference regulate nucleolar organization and repeated DNA stability.

Peng, C. J. & Karpen, G. H. *Nature Cell Biol.* **9**, 25–35 (2007)

Using fly *Su(var)* mutants, in which heterochromatin formation and function are disrupted, the authors showed that a subset of these proteins, including a histone methyltransferase and HP1, are required for correct organization of nucleoli and satellite DNAs. Members of the RNAi pathway are also required, as revealed by the analysis of RNAi mutants. The authors also show that stability of repeated DNAs requires suppression of non-homologous end joining or other recombination pathways.