IN BRIEF

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EVO-DEVO

Ancient evolutionary origin of the neural crest gene regulatory network.

Sauka-Spengler, T. *et al. Dev. Cell* **13**, 405–420 (2007)

Understanding when and how the neural crest evolved is key to understanding the origins of vertebrates, of which this cell type is a definitive feature. In this study, 50 homologues of genes that make up the neural crest gene regulatory network were identified in the lamprey, an extant basal vertebrate. Morpholino-mediated knockdown revealed that the upstream core of the neural crest regulatory network has been fixed from the base of the vertebrate lineage, whereas downstream genes are functionally more divergent and have been less evolutionarily constrained.

CHROMATIN

ISWI regulates higher-order chromatin structure and histone H1 assembly *in vivo*.

Corona, D. F. *et al. PLoS Biol.* **5**, e232 (2007)

This study explores the relationship between the chromatin-modifying processes that regulate transcription at individual genes and the more global regulation of chromatin structure. Disrupting the function of the ATP-dependent chromatin-remodelling enzyme ISWI in *Drosophila melanogaster* larvae led to altered expression of many genes and striking disruptions of higher-order chromatin structure. These defects seem to be due to a reduced amount of the histone H1 linker protein associated with chromatin, rather than defects in nucleosome assembly, suggesting that ISWI has distinct functions in regulating chromatin at the single-gene and global levels.

GENE REGULATION

Domain-wide regulation of gene expression in the human genome.

Gierman, H. J. *et al. Genome Res.* **17**, 1286–1295 (2007)

Transcriptomics has shown that human and mouse genomes contain many distinct clusters of either highly expressed or weakly expressed genes. This study provides the first evidence that residence in such domains contributes to the expression levels of genes. The expression of a GFP reporter construct that was integrated at 90 different positions correlated with the activity of the domains into which it was inserted. So, both regulation of individual genes by transcription factor complexes and domain-wide regulation seem to contribute to gene expression patterns in mammalian genomes.

DEVELOPMENTAL BIOLOGY

Focus issue on Development and Disease.

Nature Cell Biology September Issue (2007)

The six specially commissioned articles in this issue focus on how the deregulation of developmental pathways underlies human disease. A Review looks at how alterations in cell polarity and adhesion lead to cancer, and two Perspectives focus on how specific pathways lead to disease and the therapeutic potential of this knowledge. A third Perspective examines the tissue rearrangements involved in modelling organ shape. Finally, two Commentaries examine, respectively, the advantages of using mouse models and the challenges in creating stem cells from human–animal hybrids. These articles and a library of related content can be found at: <http://www.nature.com/ncb/webfocus/developmentdisease>