DOI:
10.1038/nrm2324

IN BRIEF

STEM CELLS

Induction of pluripotent stem cells from adult human fibroblasts by defined factors.

Takahashi, K. *et al. Cell* **131**, 861–872 (2007)

Induced pluripotent stem cell lines derived from human somatic cells.

Yu, J. *et al. Science* 20 Nov 2007 (doi:10.1126/science.1151526)

Following their previous report that induced pluripotent stem (iPS) cells can be generated from mouse somatic cells by retrovirus-mediated transfection of four transcription factors — OCT3/4, SOX2, KLF4 and c-MYC — Shinya Yamanaka and colleagues, and a second team led by James Thomson, have now generated iPS cells from human fibroblasts. The Yamanaka team showed a requirement for the same four factors. The factors identified by the Thomson group comprised OCT4, SOX2, NANOG and LIN28, although LIN28 was not strictly required.

CIRCADIAN RHYTHMS

Rev-erb α , a heme sensor that coordinates metabolic and circadian pathways.

Yin, L. *et al. Science* 15 Nov 2007 (doi:10.1126/science.1150179)

The mechanism by which the circadian clock is integrated into metabolic systems is poorly understood. Yin *et al.* show that the haem prosthetic group binds to the orphan nuclear receptor Rev-erb α , a negative regulator of the core circadian clock, and modulates the interaction of Rev-erb α with a corepressor complex. Haem, levels of which oscillate in a circadian manner, represses the Rev-erb α -mediated expression of gluconeogenic genes — thus linking glucose metabolism and the cellular clock.

TRANSCRIPTION

14-3-3 proteins recognize a histone code at histone H3 and are required for transcriptional activation.

Winter, S. *et al. EMBO J.* 6 Dec 2007 (doi:10.1038/sj.emboj.7601954)

14-3-3 proteins have been described as detectors for phosphorylated histone H3. Winter *et al.* report that the binding of 14-3-3 proteins to phosphorylated histone H3S10 is stabilized by additional H3K9 or H3K14 acetylation. Recruitment of 14-3-3 proteins to the promoter of the *HDAC1* gene is necessary for gene activation and coincides with dissociation of heterochromatin protein-1 (HP1), which binds the repressive H3K9me2 mark. Therefore, 14-3-3 proteins may mediate the switch from repressive to active chromatin by displacing HP1.

SMALL RNAS

Switching from repression to activation: microRNAs can up-regulate translation.

Vasudevan, S. *et al. Science* 29 Nov 2007 (doi:10.1126/science.1149460)

The authors previously showed that, on cell-cycle arrest, the AU-rich element in tumour necrosis factor- α (TNF α) mRNA is transformed from a translational repression into a translational activation signal and recruits microRNA (miRNA)-associated factors. In the current study, they show that human miRNA miR369-3 is required to activate translation of TNF α mRNA under cell-cycle arrest conditions. Two other miRNAs, let-7 and cxc4, also induce translation of target mRNAs following cell-cycle arrest. These findings suggest that translational regulation by miRNA complexes may oscillate with the cell cycle.