IN BRIEF

CELL MIGRATION

IAPs targeting RAC1

The RAC1 GTPase can promote elongated cell morphology during cell migration. Here, Oberoi *et al.* find that the inhibitor of apoptosis (IAP) proteins can directly target RAC1 for proteasomal degradation and that their loss results in increased RAC1 levels, cell elongation and enhanced directed migration. Consistent with an interaction previously observed between RAC1 and a *Drosophila melanogaster* IAP, they show here that both X chromosome-linked IAP (XIAP) and cellular IAP1 (cIAP1) act directly as E3 ligases for RAC1. This control mechanism appears to be physiologically relevant during development of the zebrafish hindbrain.

ORIGINAL RESEARCH PAPER Oberoi, T. K. *et al.* IAPs regulate the plasticity of cell migration by directly targeting Rac1 for degradation. *EMBO J.* 25 Nov 2011 (doi:10.1038/emboj.2011.423)

CELL CYCLE

Conserved role for RAB5 in mitosis

The small GTPase RAB5 was recently shown to have a role in mitosis in mammalian cells, and this study demonstrates that this function is conserved in *Drosophila melanogaster*. The authors find that RAB5 is transported to the spindle poles along astral microtubules in a dynein-dependent manner during mitosis and that it is required for proper chromosome alignment. This function was mediated through RAB5's association with Lamin and MUD (Mushroom body defect) *in vivo*: RAB5 depletion led to improper disassembly of Lamin, indicating a role in nuclear envelope disassembly; and the interaction of RAB5 and MUD was required for kinetochore–microtubule tension and thus chromosome congression.

ORIGINAL RESEARCH PAPER Capalbo, L. *et al.* Rab5 GTPase controls chromosome alignment through Lamin disassembly and relocation of the NuMA-like protein Mud to the poles during mitosis. *Proc. Natl Acad. Sci. USA* **108**, 17343–17348 (2011)
FURTHER READING Serio, G. *et al.* Small GTPase Rab5 participates in chromosome congression and regulates localization of the centromere-associated protein CENP-F to kinetochores. *Proc. Natl Acad. Sci. USA* **108**, 17337–17342 (2011)

PLANT CELL BIOLOGY

From chloroplast to nucleus

Signalling from chloroplasts and mitochondria to the nucleus regulates the expression of nuclear abiotic stress response genes. Estavillo *et al.* identify PAP (3′-phosphoadenosine 5′-phosphate) as a retrograde signalling molecule. PAP levels increased upon stress, and the phosphatase SAL1, which regulates stress signalling, was shown to degrade PAP *in vivo*. Expressing SAL1 in chloroplasts only was sufficient to reduce the total amount of PAP, and this lowered the expression of nuclear stress-response genes. Expression of SAL1 in nuclei complemented *sal1* mutants, suggesting that PAP accumulates in chloroplasts under stress conditions and is then transferred to the nucleus to regulate gene expression.

ORIGINAL RESEARCH PAPER Estavillo, G. M. *et al.* Evidence for a SAL1-PAP chloroplast retrograde pathway that functions in drought and high light signaling in *Arabidopsis*. *Plant Cell* 29 Nov 2011 (doi:10.1105/tpc.111.091033)