IN BRIEF

CELL CYCLE

Chromosome alignment and segregation regulated by ubiquitination of survivin.

Vong, Q. P. *et al. Science* **310**, 1499–1504 (2005)

Survivin is a subunit of the chromosomal passenger complex that regulates chromosome segregation. The complex associates with the centromeres during prometaphase, when chromosomes start binding to the microtubules, and moves to the central spindle at the start of anaphase, when chromosomes migrate towards the opposite poles of the cell. This paper shows that Lys63-linked ubiquitylation and deubiquitylation of survivin are required for its centromeric association and dissociation, respectively. So the ubiquitylation status of survivin is crucial for its movements during mitosis.

NUCLEAR ENVELOPE

Nesprin-3, a novel outer nuclear membrane protein, associates with the cytoskeletal linker protein plectin.

Wilhelmsen, K. *et al. J. Cell Biol.* **171**, 799–810 (2005)

Two proteins of the outer nuclear membrane, nesprin-1 and -2, are known to associate with the actin cytoskeleton. But how the intermediate-filament network and the nuclear envelope are connected has been elusive. The authors have now identified a third member of the nesprin family, nesprin-3, which lacks an actin-binding domain, but, instead, binds to the plakin-family member plectin. Nesprin-3 recruits plectin to the nuclear envelope, where both proteins colocalize with keratins, which are a type of intermediate filament.

DNA REPAIR

ATM- and cell cycle-dependent regulation of ATR in response to DNA double-strand breaks.

Jazayeri, A. *et al. Nature Cell Biol.* **8**, 37–45 (2006)

The DNA-damage-checkpoint kinases ATM and ATR are thought to respond to distinct stimuli — DNA double-strand breaks (DSBs) and other types of DNA damage, respectively. So the findings of Jazayeri *et al.* that both ATM and ATR are required in response to ionizing radiation, which causes DSBs, were surprising. ATM and the regulatory protein NBS1 are required for the processing of DSBs to generate replication protein A (RPA)-coated single-stranded DNA that is needed for subsequent ATR recruitment and phosphorylation of the protein kinase CHK1. DSB-induced ATR activation is cell-cycle regulated, which could mean that cells respond differently to DSBs at different stages of the cell cycle.

BACTERIAL INVASION

Ku70, a component of DNA-dependent protein kinase, is a mammalian receptor for *Rickettsia conorii*.

Martinez, J. J. *et al. Cell* **123**, 1013–1023 (2005)

Martinez *et al.* report the identification of the Ku70 subunit of DNA-dependent protein kinase (DNA-PK) as a receptor for the internalization of *Rickettsia conorii* into non-phagocytic mammalian cells. Bacterial invasion requires cholesterol-enriched microdomains that contain Ku70, and correlates with the ubiquitylation of Ku70 by the ubiquitin ligase Cbl. This indicates a possible role for the endocytic machinery in bacterial invasion.