IN BRIEF

CYTOSKELETON

A new partner for microtubules

Microtubules are involved in several cellular processes, including chromosome segregation, cell division and cell motility. Many of these functions are regulated by microtubule-associated proteins. Here, Chen and colleagues identify a new microtubule-associated protein with a role in cytokinesis. Through a large-scale protein localization analysis of human open reading frames (ORFs), the authors observed that the protein encoded by one ORF, KIAA1383, showed strong association with microtubules; they renamed it MTR120 (microtubule regulator 120 KDa). The localization of MTR120 to microtubules depended on a region in its middle domain that is rich in positively charged residues, a feature of microtubule-binding domains in other proteins. MTR120 promoted microtubule stabilization *in vitro*, and its loss in cells led to defects in cytokinesis as well as polyploidy.

ORIGINAL RESEARCH PAPER Fong, K.-W. *et al.* MTR120/KIAA1383, a novel microtubule-associated protein, promotes microtubule stability and ensures cytokinesis. *J. Cell Sci.* 21 Dec 2012 (doi:10.1242/jcs.116137)

METABOLISM

Role for mTORC2 in insulin resistance

Growth and proliferation of cells in response to the availability of nutrients, energy and growth factors are coordinated by mammalian target of rapamycin (mTOR), which forms two distinct complexes: mTORC1 and mTORC2. mTORC2 responds to insulin through a pathway involving insulin receptor substrate (IRS) family proteins proximal to the insulin receptor. mTORC1 has a well-characterized role in mediating insulin resistance through IRS1 downregulation. This study shows that mTORC2 can also negatively feedback to IRS1 to decrease insulin receptor signalling. The authors found that IRS1 protein levels are increased in the absence of mTORC2 owing to decreased IRS1 turnover. mTORC2 stabilizes the F-box protein FBW8 by phosphorylation at Ser86, which allows the translocation of FBW8 to the cytosol upon insulin stimulation. Cytosolic FBW8 (an E3 ligase component) mediates ubiquitylation and proteasomal degradation of cytosolic IRS1, thereby preventing chronic activation of insulin signalling.

ORIGINAL RESEARCH PAPER Kim, S. J. *et al.* mTOR complex 2 regulates proper turnover of insulin receptor substrate-1 via the ubiquitin ligase subunit Fbw8. *Mol. Cell* **48**, 875–887 (2012)

CYTOSKELETON

Nucleating actin

Tight regulation of F-actin assembly and disassembly at specific sites in the cell is crucial for its function in different cellular processes — for example, cell motility, intracellular organization and membrane trafficking. Yeast Las17 and its mammalian orthologue Wiskott–Aldrich syndrome protein (WASP) are known activators of actin-related protein 2/3 (ARP2/3)-dependent actin nucleation, which promotes the formation of branched actin networks. Here, Ayscough and colleagues report that a central Pro-rich domain in Las17 and WASP has a previously uncharacterized actin-binding activity. Importantly, they find that binding of this domain to actin promotes actin nucleation independently of ARP2/3. Furthermore, they show that Las17-mediated actin binding has a role in endocytosis.

ORIGINAL RESEARCH PAPER Urbanek, A. N. *et al.* A novel actin-binding motif in Las17/WASP nucleates actin independently of Arp2/3. *Curr. Biol.* 3 Jan 2013 (doi:10.1016/j.cub.2012.12.024)