Best Paper Award 2005

We are pleased to announce that the winner of the award for the Best Paper published in 2005 is Nathalie Delgehyr for the paper entitled 'Microtubule nucleation and anchoring at the centrosome are independent processes linked by ninein function' (Delgehyr et al., 2005).

The prize, $1000, is awarded annually to the first author of the paper that is judged by the Editors and Editorial Board to be the best published in the Journal that year. To be considered for the prize, the first author must be a student or postdoc of no more than five years standing.

Nathalie Delgehyr was born in Paris, France. After completing a degree in cell biology and development, she joined the laboratory of Michel Bornens (Curie Institute, Paris) as a PhD student, to pursue studies on centrosome function. The centrosome is a small organelle present in most animal cells that consist of two centrioles surrounded by an electron-dense substance called pericentriolar material. In spite of centrosomes being observed as early as 1875 by Flemming (Flemming, 1875), many aspects of centrosome function as well as the mechanism for centrosome duplication remain unclear to date. Centrosomes have been implicated, among other functions, in microtubule organisation during interphase and mitosis, cell-cycle progression, the definition of the division plane, positioning of the nucleus and cell motility (Rieder et al., 2001). Each centriole duplicates only once per cell cycle by budding a new centriole near the older one. The younger (daughter) centriole and the older (mother) centriole have different behaviours in interphase. The daughter centriole is motile throughout the cytoplasm, whereas the mother centriole is almost stationary in the centre of the cell (Piel et al., 2000). The mother centriole exhibits two sets of appendages: the distal appendages that may be involved in the anchorage of the mother centriole to the plasma membrane to allow the formation of a cilium (Anderson, 1972; Baron and Salisbury, 1988) and the subdistal appendages that have been observed by electron microscopy to anchor microtubules (De Brabander et al., 1982; Gorgidze and Vorobjev, 1995). The exact functions of this centriole remain unclear, and Nathalie decided to focus on the role of the mother centriole in mammalian cells.

First, she investigated the role of δ-tubulin, which had been previously shown to be important for the integrity of the basal body (the centriole at the base of a flagellum or cilium) in *C. reinhardtii* and in *P. tetraurelia* (Dutcher and Trabuco, 1998; Garreau de Loubresse et al., 2001; O'Toole et al., 2003). Nathalie teamed up with Oskar Smrzka, a post-doctoral fellow, to show that δ-tubulin is primarily expressed in mouse testis and localised in mature sperm and elongated spermatids, whereas it is found at low levels in other tissues (Smrzka et al., 2000).

Second, she addressed the mechanisms for organization of microtubule arrays by the centrosome. This process rests on the elaborate control of anchoring and release of the minus-end of nucleated microtubules. Protein complexes participating in microtubule nucleation, such as the γ-TuRC, have been extensively characterized (Moritz and Agard, 2001). Meanwhile, the concept of a microtubule-anchoring complex is only beginning to emerge (Bornens, 2002; Dammermann et al., 2003). Furthermore, the coordination of microtubule nucleation and anchoring by the centrosome remains an open question. Nathalie provided a new link among these processes through her studies on the centrosome component ninein. This protein is mainly located at subdistal appendages of the mother centriole (Mogensen et al., 2000). Nathalie mapped a region required for ninein localisation to centrosomes and a separate domain mediating the recruitment of the microtubule nucleation complex, the γ-TuRC. These results are consistent with a proposed role for ninein in anchoring; yet, the interaction with the γ-TuRC also implicates ninein in promoting MT nucleation. A minimal ninein chimerical construct that tethers the γ-TuRC to the centrosome (thus supporting nucleation) proved, however, insufficient for MT anchoring. Thus, ninein may constitute a crucial molecular link between MT nucleation and anchoring at centrosomes (Delgehyr et al., 2005).

Recently, Nathalie moved to the laboratory of Marisa Segal at the University of Cambridge, UK, to address how microtubule plus-ends undergo capture at the cell cortex as part of a programme controlling spindle orientation in the budding yeast *Saccharomyces cerevisiae*.

Fiona Watt
(Editor-in-Chief)

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Although we discourage submission of unsolicited Commentaries to the journal, ideas for future articles – in the form of a short proposal and some key references – are welcome and should be sent to the Executive Editor at the address below.

Journal of Cell Science, Bidder Building, 140 Cowley Rd, Cambridge, CB4 0DL, UK
E-mail: jcs@biologists.com; http://jcs.biologists.org