

## **Microtubule regulation from the lumen**

Microtubules are hollow tubes that can grow and shrink alternately. In neurons, dynamic microtubules coexist alongside long-lived stable microtubules that are essential for neuronal architecture and function. Proteins located in the lumen of microtubules, known as MIPs (Microtubule Inner Proteins) are thought to contribute to microtubules stability, by analogy with the extreme microtubule stability in cilia/flagella required to resist high beating frequency and controlled by MIPs. MIPs have long been observed in most neuronal microtubules, but their identity was unknown until we identified the first as MAP6. I will present our recent work about the molecular mechanisms underlying neuronal microtubule stabilisation and organisation by two members of MAP6 family, MAP6 and MAP6D1.