SOCIÉTÉ CHIMIQUE DE GENÈVE

A liquid + TIP - network regulates microtubule dynamics through tubulin condensation

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Regulation of microtubule dynamics is required for many biological processes. Here we uncovered a novel mechanism to regulate microtubule dynamics: local tubulin condensation. We show that two microtubule tip-binding proteins, CLIP-170 and EB3, undergo phase separation and form a liquid-like network at growing microtubule tips. In vitro and in cells this liquid network can condense tubulin. This process of tubulin co-condensation is spatially initiated at the microtubule tip and temporally regulated to occur only when microtubules grow. Tubulin condensation at the growing microtubule tip increases growth speeds up to four-fold and strongly reduces depolymerization events. Since tubulin concentration determines microtubule growth, our discovery shows a regulatory mechanism for enriching tubulin availability at strategically important locations: the growing microtubule tips.

Conférence présentée le

LUNDI 6 DECEMBRE 2021 à 17h30

Université de Genève – Bâtiment Sciences II
Auditoire A. Pictet A100
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