

Supplementary Information

Figure S1. Effect of EB1 on microtubule sheet length.

Microtubules were polymerized in different conditions: 45 μM tubulin without or with 1.5 μM EB1, and 90 μM tubulin. Sheet length distributions are given for different assembly time points (elongation, overshoot and plateau). L_{avg} , average length; El., elongation; Ov., overshoot; Pl., plateau.

Figure S2. EB1 induces the closure of tubulin sheets assembled in the presence of GMPCPP and DMSO.

(a) and (b) Negative-staining electron microscopy of microtubules assembled from 20 μM tubulin in BRB80 buffer supplemented with 1 mM GMPCPP and 5 % DMSO, in the absence (a) and in the presence (b) of 2.0 μM EB1. S, sheet; T, tube. Scale bar, 50 nm. (c) Percentages of tubes and sheets obtained for the control and with 2.0 μM EB1. Results are the mean of two experiments. The total measured length was 120 μm for the control and 147 μm with EB1.

Table S1. Microtubule types assembled at 45 μM tubulin, 90 μM tubulin and 45 μM tubulin with 1.5 μM EB1.

El., elongation; F_{trans} , transition frequency; Ov., overshoot; Pl., plateau; MT, microtubule; 13(s), skewed 13-protofilament microtubule.

Supplementary Methods. Microtubule assembly with GMPCPP and DMSO.

To test the effect of EB1 on tubulin sheet closure, 20 μM tubulin was mixed at 4 $^{\circ}\text{C}$ in BRB80 with 5 % DMSO and 1 mM GMPCPP, in the absence or in the presence of 2.0 μM EB1, according to published procedures⁹. Samples were incubated 10 min at 36 $^{\circ}\text{C}$, diluted 10 times in BRB80 and prepared for electron microscopy using the negative staining method. A 4 μl sample was applied onto a collodion/carbon-coated grid, blotted and stained with 1 % uranyl acetate for 0.5 min. Grids were observed using a Philips CM12 electron microscope operating at 120 kV (FEI Company, Eindhoven, The Netherlands). Images were recorded at a magnification of 22,000 X and ~ 2.5 μm underfocus. Negatives were digitized using a NIKON Super CoolScan 9000 ED scanner at 2540 dpi (NIKON-France, Champigny sur Marne, France). Sheet and tube lengths were measured using Image J (National Institute of Health, MD, USA).