

Inventory of Supplementary Materials

Supplemental Figures

Figure S1 (related to Figures 1,2,3 and 4): Nup188 and Nup93 are required for cilia in mammalian cells and *Xenopus*.

Figure S2 (related to Figures 1, 2 and 3): Nup188 overexpression specifically affects cardiac looping and cilia.

Figure S3 (related to Figure 4): Nup93/188 localize to the basal body and daughter centriole.

Figure S4 (related to Figure 5): Comparison of number of detections per cluster for both Nup93 and Nup188 in 2D-FPALM and fluorescence intensity in STED.

Figure S5 (related to Figure 6): Nup188 is found in multiple copies within evenly spaced clusters at the cilium base.

Figure S6 (related to Figure 6 and movie S3): Distribution of anti-Nup188 single molecule detections with reference to cylinder surface.

Movie Legends

Movie S1 (related to Figure S1D): Knockdown of Nup93 alters gliding in *Xenopus* embryos.

Movie S2 (related to Figure 6): Nup188 surrounds the centrioles in evenly spaced clusters that organize into two barrel-like structures.

Movie S3 (related to Figure 6): 3D movies of W-4PiSMSN data of multiple barrel structures with fitted cylinders.

Supplemental Experimental Procedures

Frog husbandry

Microinjection of MOs and mRNA in *Xenopus* embryos

Cardiac looping in *Xenopus*

Whole mount *In situ* hybridization

Gliding assays

Animal caps

Antibodies

Western blots

Cell culture and siRNA experiments

Statistical analysis

Immunostaining and SNAP labeling

Conventional fluorescence imaging and analysis

Super-resolution imaging and analysis: 2D FPALM

2D FPALM image analysis

W-4PiSMSN (3D) acquisition

W-4PiSMSN (3D) analysis

STED Microscopy imaging and image analysis

Table S1

Supplementary References