CentrinFish Permit the Visualization of Centrosome Dynamics in a Cellular Context *In Vivo*

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AS THE MAJOR MICROTUBULE organizing center in metazoan cells, centrosomes play key roles in mitotic spindle assembly, cell signaling, polarity, and motility.¹ Additionally, centrosomal dysfunction is associated with a broad range of disorders from tumors to ciliopathies.¹ Visualizing these organelles *in vivo* in a broad range of cell biological contexts would help better elucidate their roles in physiological and disease conditions. In an article on adaptive optics, Wang *et al.* used a novel transgenic line to image centrosomes *in vivo* in larval zebrafish.² In this line, which we call CentrinFish, centrosomes and cellular membranes are labeled by spectrally distinct fluorescent proteins, permitting their simultaneous visualization (Fig. 1). Thus, centrosome localization and dynamics can be studied within a cellular context. Moreover, because the reporters are driven by UAS cassettes, expression can be targeted to specific cell types by crossing CentrinFish to appropriate Gal4-driver lines.

FIG. 1. The CentrinFish transgene construct contains two UAS reporter cassettes, centrin4-YFP to label centrosomes (cetn4-YFP) and an N-terminal palmitoylation sequence from neuromodulin to target Cerulean to the plasma membrane (MA-Cerulean). An additional cassette in which the cardiac myosin light chain (cmc2) promoter drives the expression of Cerulean helps identify transgene carriers by cyan fluorescence in the heart, independent of Gal4-driven transactivation (A). Confocal images of the retina from 2.5 dpf CentrinFish (reporter expression driven by a transgenic line in which Otx2 promoter elements³ drive Gal4, B, C). Time-lapse images of a cell undergoing mitosis in the retina (C). Scale bar 10 μ m (B, C). Color images available online at www.liebertpub.com/zeb

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