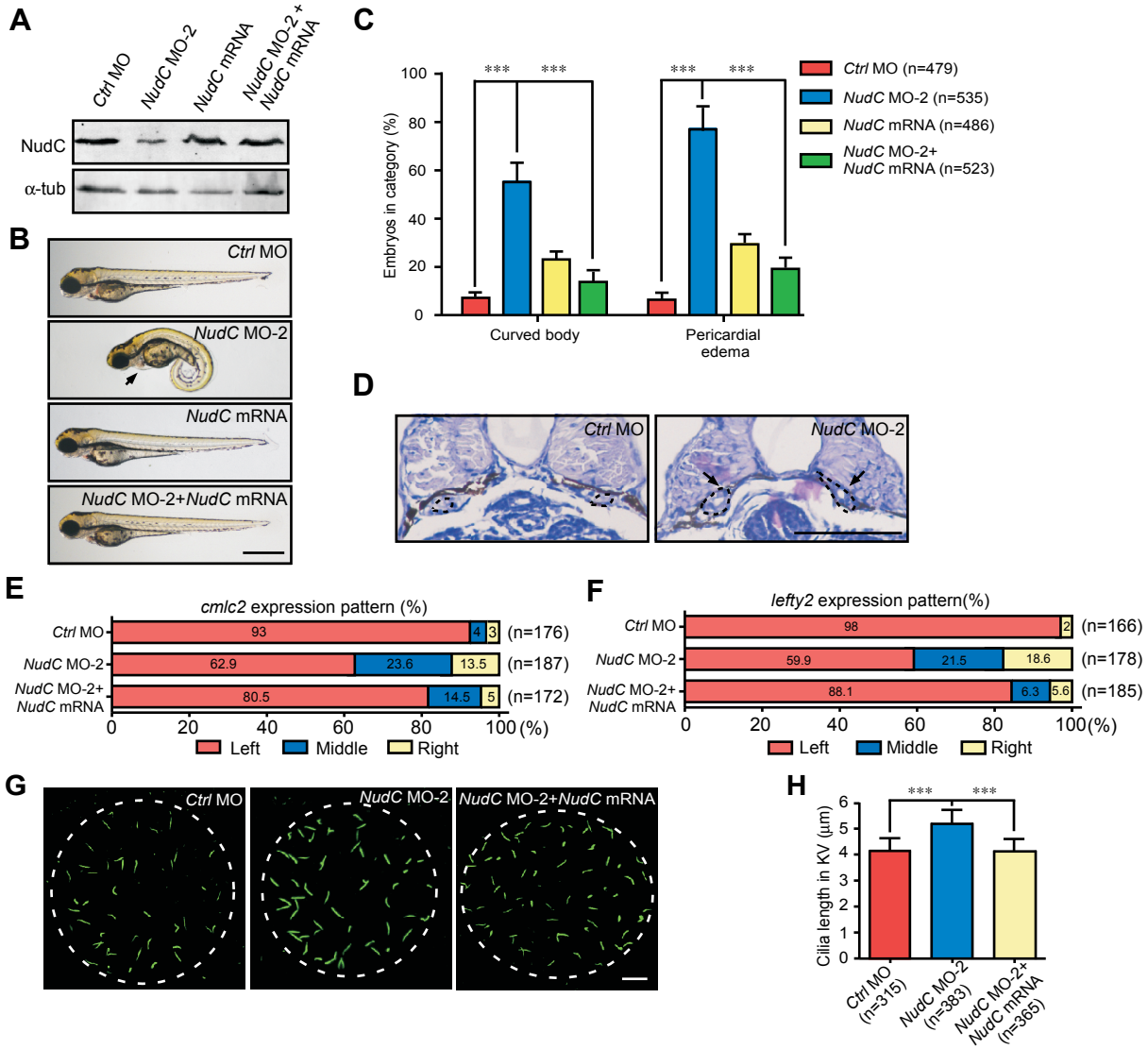


**Supplementary information, Figure S7** Zebrafish embryos injected with *NudC* MO-2 exhibit multiple ciliary defects. Embryos treated with 4 ng *Ctrl* MO, 4 ng *NudC* MO-2, 25 pg *NudC* mRNA or 4 ng *NudC* MO-2 plus 25 pg NudC mRNA were collected at the indicated times. (A) Immunoblotting analysis showing efficiency of NudC knockdown. α-tub is used as the internal control. (B, C) Bright-field micrographs showing body curvature and pericardial edema (arrow) in zebrafish injected with *NudC* MO-2 at 72 hpf. Scale bar, 500 μm. (D) Cross-sections of NudC morphant show dilatedpronephric ducts (arrows) at 72 hpf. Black dashed lines indicate the boundaries of pronephric ducts. Scale bar, 200 μm. (E, F) Percentage of the different expression patterns of *cmlc2* (E) or *lefty2* (F) mRNA reveals that NudC morphant exhibits defective left-right asymmetry. (G, H) Immunofluorescence with anti-ace-tub antibody (green) shows longer cilia in KV of NudC morphant at 8 ss. Scale bar, 10 μm. Cilia length in KV is measured by Image J software. Quantitative data derived from three independent experiments are shown as mean ± SD. n, sample size. ***$P < 0.001$.