Supporting Information

Rosenthal et al. 10.1073/pnas.0901321106

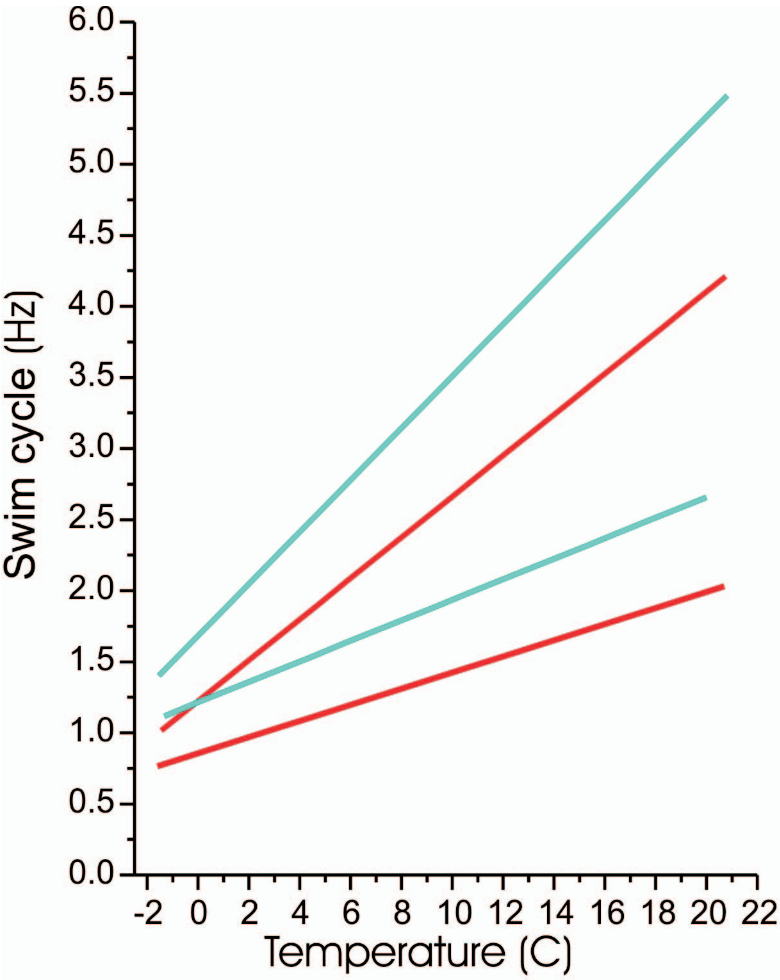


Fig. S1. Fits to fast and slow swimming. Linear least-squares fits of slow and fast swimming for *C. limacina* (orange, data from Fig. 2*C*) and *C. antarctica* (blue, data from Fig. 3*B*). Both lines for *C. antarctica* are shifted toward lower temperatures, indicating a modest compensation for temperature. At its native temperature, the swim cycle for *C. antarctica* is about as fast as that for *C. limacina* at 4.5 °C in the slow mode, and at 2 °C in the fast mode. Conversely, for a *C. limacina* at its native temperature (≈10 °C), its swim cycle is equivalent to that of a *C. antarctica* at 3 °C in the slow mode and 5 °C in the fast mode. This modest compensatory adjustment in the swim cycle is apparent in whole animal wing-beat frequencies as well [Seibel et al. (2007) Metabolic temperature compensation and coevolution of locomotory performance in pteropod molluscs. *J Integ Comp Biol* 47:880–891)]. Based on these recordings, we would predict that intact *C. antarctica* could swim fast at elevated temperatures. However, when put in sea water of >2 °C, animals undergo a whole-body withdrawal reflex and cease all movements. Temperatures greater than 4 °C are lethal. We therefore assume that elevated temperatures adversely affect other neural circuits.

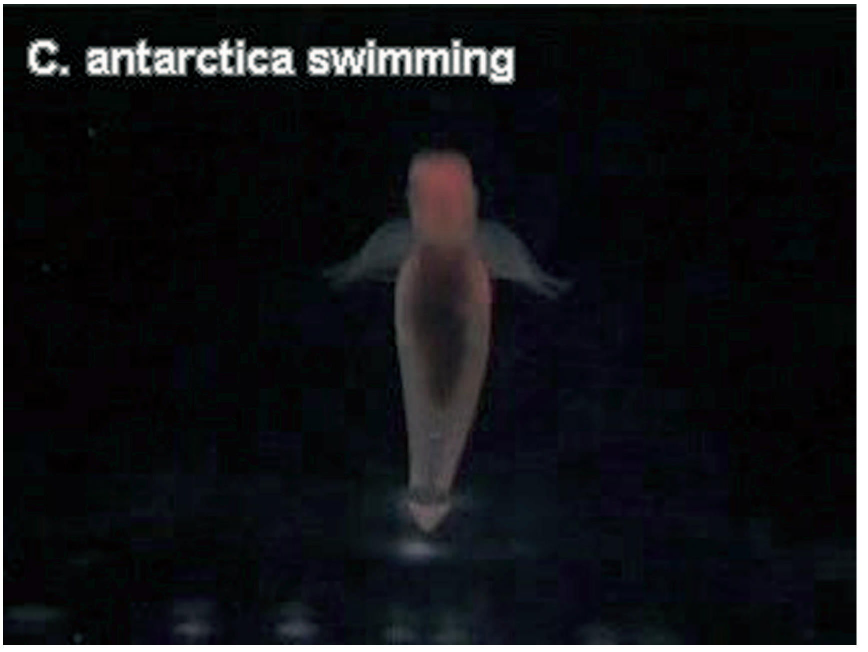
Movie S1. Video clip of *C. limacina* swimming in the slow mode at 8 °C in filtered seawater.

Other Supporting Information Files

Movie S1 (MPG)

Movie S2. Video clip of *C. limacina* swimming in the fast mode at 8 °C in filtered sea water with 50 μM serotonin. This is the same animal as in Movie S1.

Movie S2 (MPG)



Movie S3. Video clip of *C. antarctica* swimming at 0 °C in filtered seawater. This was the only apparent mode for *C. antarctica* as speed changes were never observed. Addition of serotonin to the sea water did not affect swimming.

Movie S3 (MPG)