(Supplementary information)

Bidirectional Temperature-sensing by a Single Thermosensory Neuron in *C. elegans*

Daniel Ramot, Bronwyn L. MacInnis, & Miriam B. Goodman†

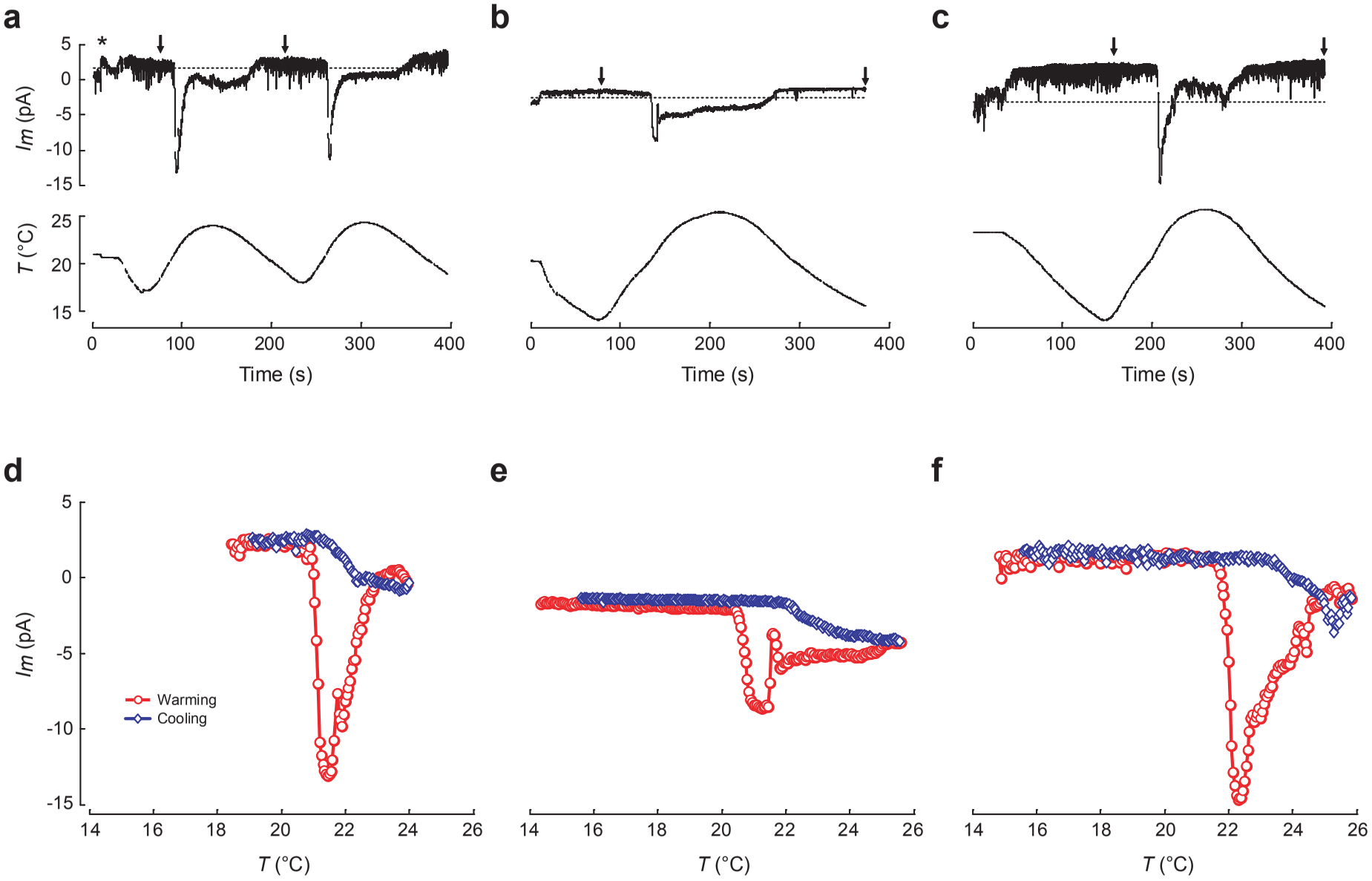

Figure S1. **Additional wild type ThRCs.**

a, b, c, AFD membrane currents (top) at V_h = –60 mV (**a** and **c**) or –50 mV (**b**) in response to temperature ramps (bottom). Asterisk in a denotes an example of a response to a brief temperature step. **d, e, f,** ThRCs plotted against temperature (binned at 0.05 ºC intervals). Data are taken from the regions indicated by arrows in **a, b** and **c** respectively. Recordings were performed in standard saline (**a** and **d**), K^+–free internal saline (**b** and **e**), and a starved animal, standard saline (**c** and **f**).

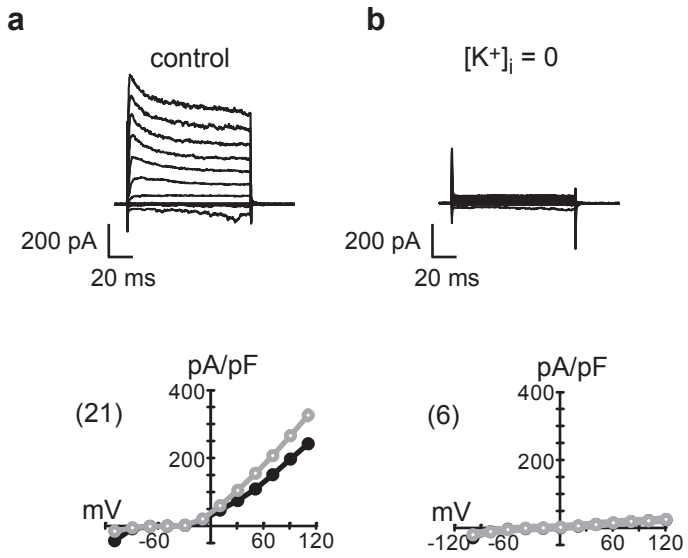

Figure S2. **Voltage-activated outward currents are carried by K^+ in wild type AFD.**

a, Voltage–activated currents recorded in standard saline. **b,** Voltage–activated currents in K^+–free internal saline. The top panels are the response to a series of 100 ms voltage pulses in a representative recording; the bottom panels are the average current–voltage relationships for peak (gray) and steady–state current (black). A series of voltage pulses between –110 and +110 mV (in 20 mV increments) from V_h = –60 mV (**a**) or –50 mV (**b**). The number of recordings is indicated in parentheses; error bars are s.e.m., but are smaller than symbols in many cases. *wt*, wild type.

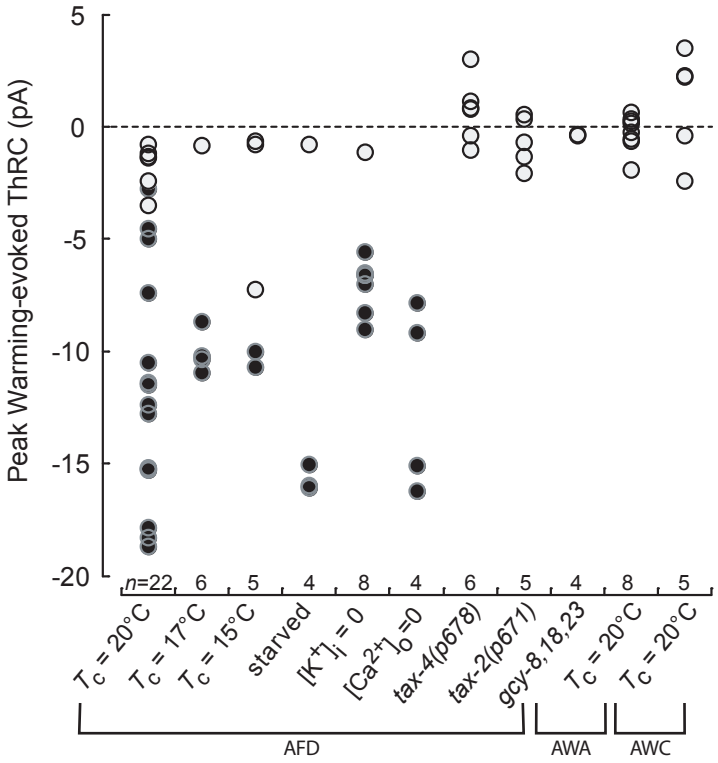

Figure S3. Peak amplitude of warming–evoked ThRCs.

Black and gray circles indicate responses that exceeded and fell below threshold, respectively. The number of recordings is indicated for each cell and genotype. Unless indicated animals were cultivated at 20°C in the presence of ample bacterial food. The holding potential was –60 mV for all conditions and cell types except for AFD recordings in K^+-free internal saline in which the holding potential was –50 mV. Values for *gcy–8gcy–18gcy–23* triple mutant AFD recordings were between –0.35 and –0.38 pA, and appear as a single point in this plot.

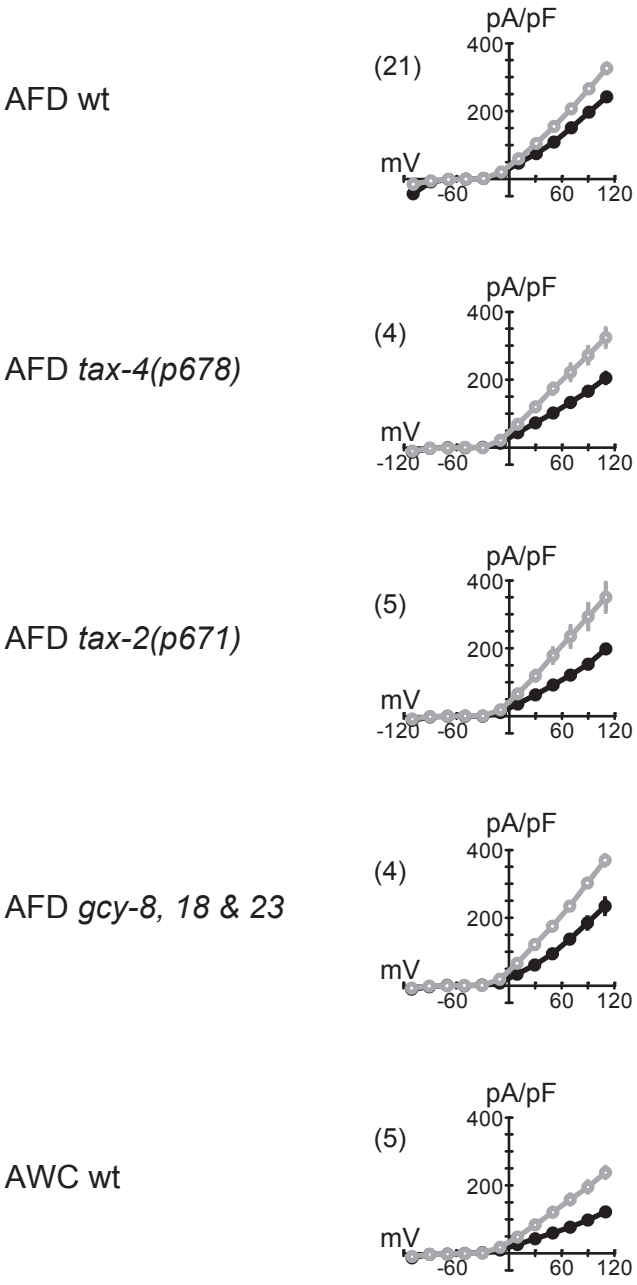

Figure S4. Average current–voltage relationships across cells and genotypes.

Average peak (gray circles) and steady–state (black circles) current is plotted vs. voltage. The number of recordings is indicated in parentheses; error bars are s.e.m., but are smaller than symbols in many cases. Data are from animals grown at 20 ºC. *wt*, wild type. The number of recordings is indicated in parentheses. Data for wild type are the same as those shown Fig. S2.