



Supplementary Fig. S1. Electrophysiological recording of the cultured adult neurons.

To validate the viability of the neurons in the culture, we performed patch-clamp recording of 11 female rat DRG neurons from 3 animals, whose passive properties were: $C_m = 43 \pm 2 \text{ pF}$ and $V_m = -54 \pm 2 \text{ mV}$.

In the left panel, a family of ionic currents produced by the injection of square voltage protocol from a holding potential from -80 mV and pulses from -110 mV to 40 mV under the voltage-clamp configuration of the patch-clamp technique. The recordings were done with the same extracellular solution of the calcium imaging experiments and the intracellular solution had the following composition (in mM): 125 KCl, 10 NaCl, CaCl₂ 0.134, EGTA 10, HEPES 5, pH 7.2 adjusted with KOH. Inward Na currents and outward K currents are present.

In the right panel, under the current-clamp configuration of the patch-clamp technique, an action potential was elicited by a square current pulse of 140 pA. The neuron produced a single action potential with a clear overshoot and after hyperpolarisation.