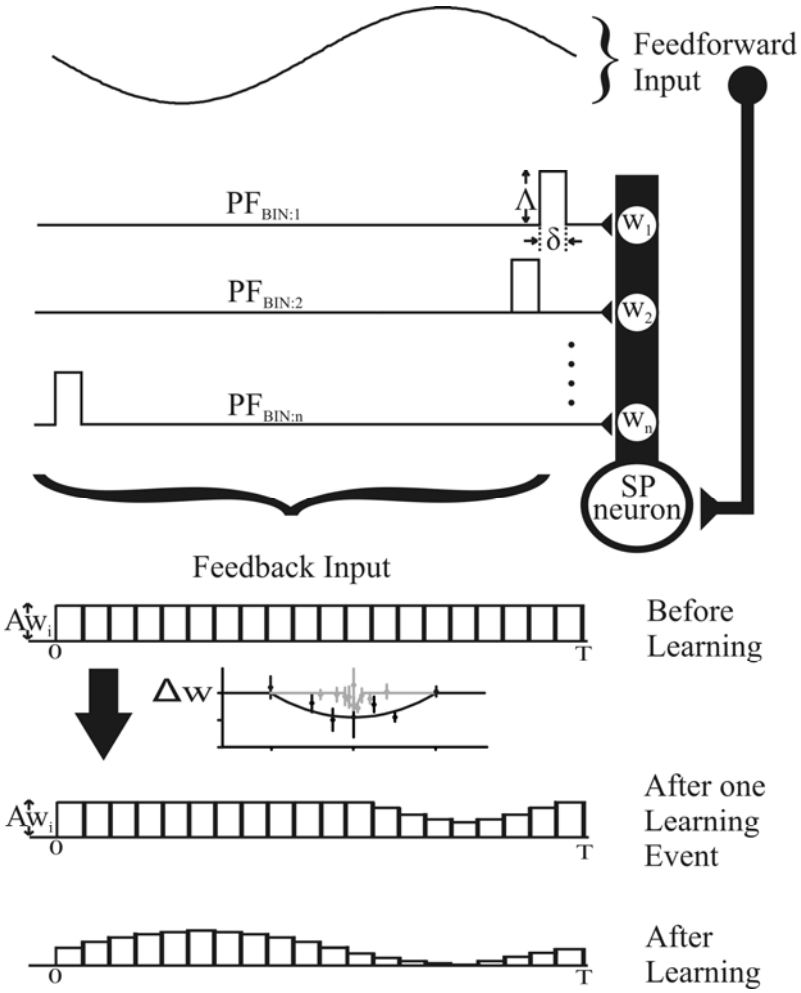

Figure 2011C. Schematic of feedback cancellation in the model superficial pyramidal (SP) neuron.
Due to the distribution of delays of excitatory parallel fiber feedback (see Figure S1 and S2), parallel fiber input is binned into non-overlapping temporal segments (δ = 2.5 ms) with equal strength (Λ =1) . Each bin has its own unique synaptic weight (w_i), which is governed by the burst-induced depression and activity-independent recovery rules of the model. If a global, low-frequency signal is presented to the fish, illustrated by the continuous sine wave above, the parallel fibers feedback will be slowly shaped by the burst learning rules, as the neuron bursts preferentially at the peak of the feedforward input, decreasing the feedback at this phase. Parallel fibers also activate disynaptic inhibitory neurons (not shown), which keep the firing rate of the SP neuron close to its spontaneous rate. After successful learning, the parallel fiber feedback cancels the feedforward input by approximating the signal in antiphase.