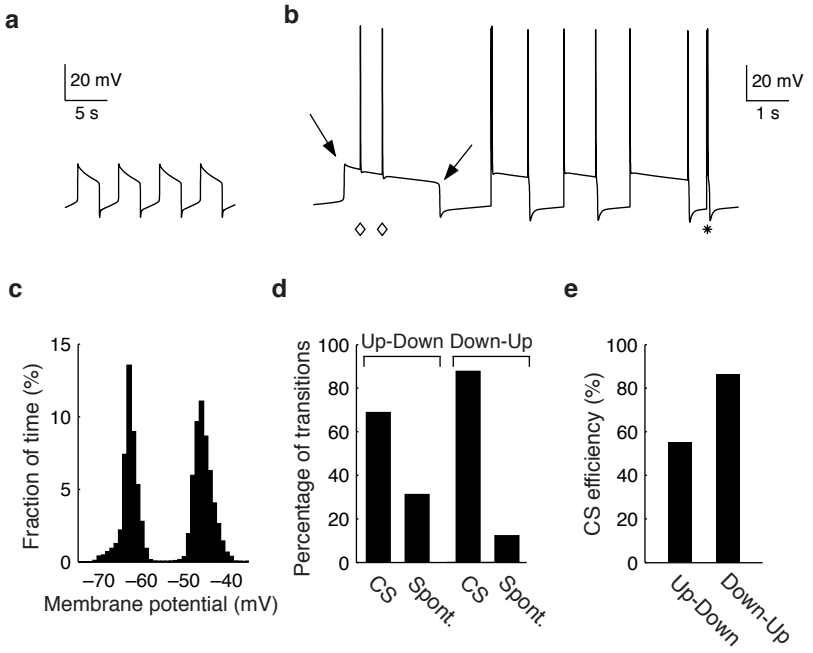

Loewenstein, Supplementary Figure 2

Supplementary Figure 2. A model of bistability demonstrates CF-evoked and spontaneous transitions.

Simulation of a model neuron consisting of a non-inactivating inward current, a slow h-like current, a voltage-independent outward current and a slowly activating outward current. (**a**) In the absence of synaptic input, the model exhibits periodic transitions between the up and down states as observed *in vitro*. (**b-e**) simulation of the model in the presence of random climbing fiber input at a rate of 1 Hz. (**b**) Although most state transitions are triggered by climbing fiber input and most complex spikes are followed by a transition, a minority of the transitions occur spontaneously (arrows) and a minority of complex spikes in the up state are not immediately followed by a transition to the down state (diamonds); and a minority of complex spikes in the down state do not trigger a transition to the up state (asterisk). (**c**) Model cell bistability is reflected in the bimodal distribution of the membrane potential. (**d**), The percentage of up-down and down-up transitions associated with complex spikes (CS), or occurring spontaneously (Spont.). (**e**) The efficiency of a complex spike occurring during the up state in inducing transitions to the down state (Up-Down) and the efficiency of a complex spike occurring during the down state in inducing transitions to the up state (Down-Up).