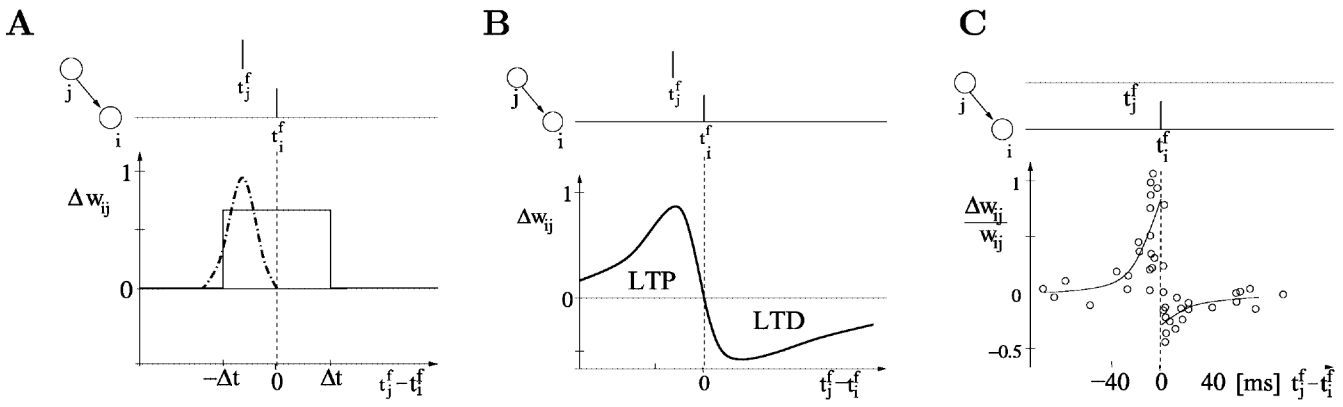

Fig. 3A–C. Learning window. The change Δw_{ij} of the synaptic efficacy depends on the timing of pre- and postsynaptic spikes. **A** The *solid line* indicates a rectangular time window as it is often used in standard Hebbian learning. The synapse is increased if the pre- and the postsynaptic neuron fire simultaneously with a temporal resolution Δt. The *dashed–dotted line* shows an asymmetric learning window useful for sequence learning (Herz et al. 1989; Gerstner and van Hemmen 1993). The synapse is strengthened if the presynaptic spike arrives slightly before the postsynaptic one, and is therefore partially 'causal' in firing it. **B** An asymmetric biphasic learning window as introduced in model studies of delay selection (Gerstner et al. 1996). A synapse is strengthened (long-term potentiation, *LTP*) if the presynaptic spike arrives slightly before the postsynaptic one, but is decreased (long-term depression, *LTD*) if the timing is reversed. The biphasic learning window is sensitive to the temporal contrast in the input. **C** Experimental results have confirmed the existence of biphasic learning windows. *Data points* redrawn after the experiments of Bi and Poo (1998)