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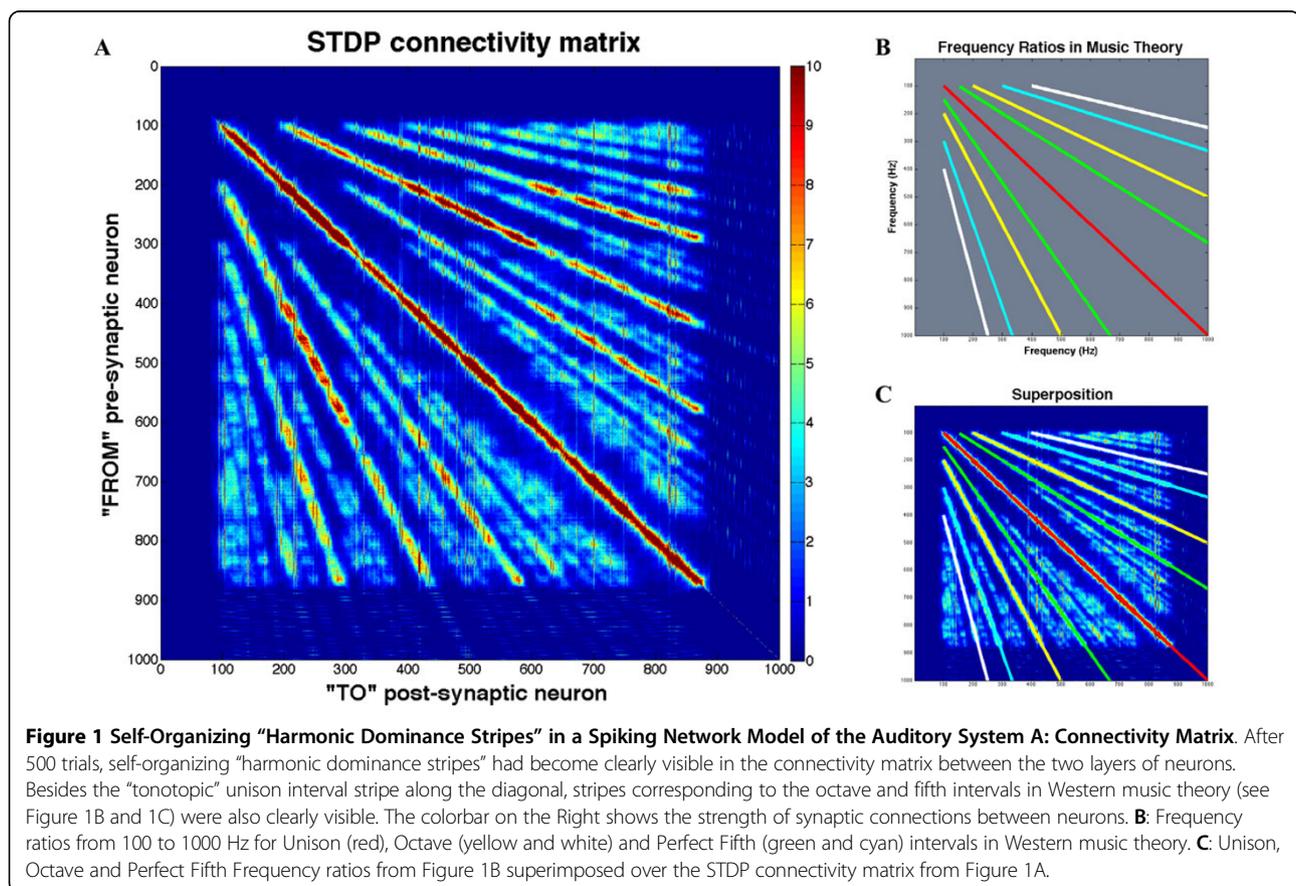
# Self-organizing “harmonic dominance stripes” in a spiking network model of the auditory system

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A model of the auditory system was developed which implements spike timing dependent plasticity (STDP) [1] in a biologically realistic network of spiking excitatory Izhikevich neurons [2]. The model self-organizes in

response to periodic sound and exhibits “harmonic dominance stripes” (Figure 1A) in the STDP connectivity matrix between the two layers of the network. These “harmonic dominance stripes” are akin to the activity



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dependent formation of “ocular dominance columns” in the visual system, as both are architectural features that emerge through a process of self-organization as a result of passive exposure to patterned sensory input during development. The self-organizing “harmonic dominance stripes” also happen to correspond to consonant intervals (Figure. 1B and 1C) in music theory.

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