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Title:

From Song to Synapse: the Neural Mechanisms of Vocal Learning

Abstract:

Whereas most vertebrates produce only innate vocalizations, humans and songbirds learn their species typical vocalizations by imitating an appropriate vocal "tutor." How the brain enables the learning of such culturally transmitted behaviors remains largely unknown. Recent experiments using songbirds have begun to identify the synaptic mechanisms that underlie vocal learning. Gain and loss of function methods, including genetic perturbations of neural activity in freely singing birds, have established the synaptic mechanisms that are both necessary and sufficient for forming an auditory memory of a tutor song and for converting this memory into a vocal pattern.