

"Why do birds sing? Neuroendocrine regulation of socially-appropriate vocal communication"

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Vocal communication in many animal species, including humans, is critical for successful social interactions. Although in some animal models, such as songbirds, a growing body of literature exists on brain regions involved in vocal learning and production (i.e., the song control system); little is known about neurobiological mechanisms regulating the motivation to communicate. In European starlings, during the breeding season when testosterone concentrations are high, song is highly sexually motivated and elicited by the presence of a female. In contrast, outside of the breeding season when testosterone is low, males continue to sing at high levels when in large flocks, but the presence of a female does not affect song production. Thus the same behavioral output is motivated by very different stimuli depending on an animal's endocrine state. Given that song during the breeding season can be highly sexually motivated, brain areas outside of the song control system, such as those involved in the anticipation of copulatory behavior or motivation in general are also likely to play an important role in this type of singing behavior. A major aim of current research in the laboratory is to identify the extent to which the neural mechanisms regulating vocal production differ depending upon the context in which song is produced.

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