

A gene implicated in human language affects song learning in songbirds

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Do special “human” genes provide the biological substrate for uniquely human traits, like language? Genetic aberrations of the human FoxP2 gene impair speech production and comprehension, yet the relative contributions of FoxP2 to brain development and function are unknown. Songbirds are a useful model to address this because, like human youngsters, they learn to vocalize by imitating the sounds of their elders.

Previously, Dr. Constance Scharff and colleagues found that, when young zebra finches learn to sing or when adult canaries change their song seasonally, FoxP2 is up-regulated in Area X, a brain region important for song learning.

Published this week in the open-access journal *PLoS Biology*, Dr. Sebastian Haesler, Dr. Scharff, and colleagues experimentally reduce FoxP2 levels in Area X before zebra finches started to learn their song. They used a virus-mediated RNA interference for the first time in songbird brains.

The birds, with lowered levels of FoxP2, imitated their tutor’s song imprecisely and sang more variably than controls. FoxP2 thus appears to be critical for proper song development. These results suggest that humans and birds may employ similar molecular substrates for vocal learning, which can now be further analyzed in an experimental animal system.

Citation: Haesler S, Rochefort C, Georgi B, Licznarski P, Osten P, et al.

(2007) Incomplete and inaccurate vocal imitation after knockdown of FoxP2 in songbird basal ganglianucleus Area X. PLoS Biol 5(12): e321. doi:10.1371/journal.pbio.0050321 (www.plosbiology.org)

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