**Sex differences in myelination of the song control system**

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The song control system (SCS) is an intensively studied network in the songbird brain, responsible for the learning, production, and maintenance of song. Extreme sex differences exist within the SCS and in singing behaviour, making songbirds an excellent model to study sex differences in the brain. Previous work has examined volume, neural number and density of SCS nuclei, while other important components of brain nuclei have been relatively unexamined. Myelination of the SCS, vital to the function of the nuclei and network, is relatively unexamined. In the current study, we used adult male and female zebra finches to examine sex differences in myelination of the SCS, specifically because males sing while females do not. To measure myelination in the SCS, we used immunohistochemical labeling of myelin basic protein (MBP). Regions examined included nucleus HVC, RA, and LMAN, in addition to tract HVC to RA, and HVC to Area X contained within lamina mesopallium ventralis (LMV). We found a significant male-biased sex difference in MBP immunoreactivity within HVC, RA, and the HVC to RA tract, but not within LMAN or LMV. This suggests myelination of HVC, RA, and the HVC to RA tract is important to functional adult song, as males sing and females do not. Furthermore, results for LMAN and LMV suggest they are functionally important for females, potentially for the perception of song, and/or the production of non-song vocalizations. Determining how sex differences in myelination of the SCS are regulated will provide an important advance in basic neurobiology.