

Contextual modulation of communication processing in bats

Thursday, July 6, 2023 11:50 AM (50 minutes)

Bats are auditory specialists, processing acoustic signals to guide their behaviors, including prey tracking, navigation and communication. In this talk I will provide a brief overview of my previous work related to how bats analyze and process signals for action-selection; and I will focus on communication signals, the line of research of my current lab. There is strong evidence that context plays a role in the processing of acoustic signals. Yet, the circuits and mechanisms that govern this process are still not fully understood. Bats emit a wide array of communication calls, including food claiming calls, aggressive calls and appeasement calls. Previously, we showed that there are selective neurons for communication and echolocation calls in the inferior colliculus (IC) of bats passively listening to sound playbacks. Now, we developed a novel competitive foraging task to explore the role of behavioral context in auditory responses to social calls. With this approach, we recorded neural population responses from the IC of freely interacting bats. Our data show that bats spend a significant amount of time engaging in interactive social behaviors and emitting communication calls as they compete for food. Furthermore, analysis of our neural recordings from the IC show stronger population responses to individual calls during behaviorally aggressive events. These results indicate that behavioral context plays a role in the modulation of neuronal population responses to social vocalizations in the bat IC.

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Session Classification: Invited talk