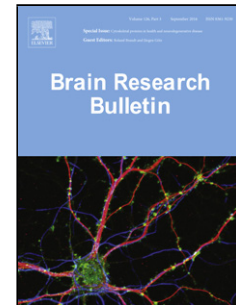


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Goal-directed behavior elevates gamma oscillations in nidopallium caudolaterale of pigeon

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Abstract

Avian nidopallium caudolaterale (NCL), a functional analogue of mammalian prefrontal cortex, is thought to be participated to goal-directed behavior. However, few studies so far investigated local field potential (LFP) properties within this area. In this study, we recorded the LFP activity from the NCL of six pigeons when they performed a goal-directed decision-making task in a plus-maze. Spectral analysis revealed a significant LFP-power increase in the gamma-band (40–60 Hz) during the decision-making process. Moreover, the LFP activity in the gamma-band was modulated by the behavioral outcomes of pigeons. It could decode effectively the motion directions of animals. These results indicate that the gamma rhythm of LFP recorded from the NCL correlates with the goal-directed behavior of pigeons.

Keywords: Pigeon, Local field potential, Nidopallium caudolaterale, Goal-directed behavior, Gamma rhythm

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