Brainstem Circuits that Control the Episodic, Context-dependent Expression and Directionality of Locomotion

April 20

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Live Webinar
via Zoom Conference

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Abstract

The capacity for movement is essential to life. Of movements, locomotion is one of the most fundamental and the output measure of many complex brain functions. To be executed, locomotion requires dynamic initiation and termination and appropriate directionally. This lecture will focus on recent advances that has elucidated the functional organization of brainstem motor circuits in mammals needed to perform these roles. It will show that designated command pathways in the brainstem control the episodic and context-dependent expression of locomotion and that directionality of locomotion is controlled by asymmetric activity in discrete brainstem circuits. The work suggest specific links to how higher brain functions are executed through movement acts and how locomotor disturbances following basal ganglia disorders may be alleviated.
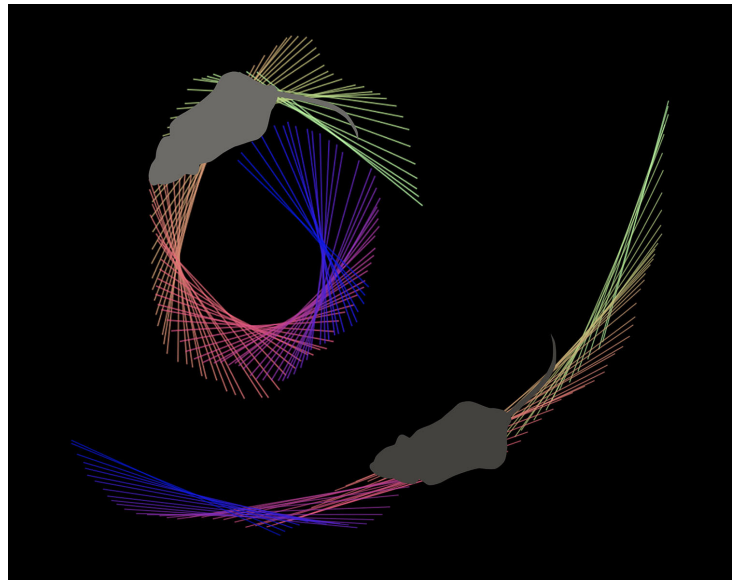
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2. Caggiano V, Leiras R, Goñi-Erro H, Masini D, Bellardita C, Bouvier J, Caldeira V, Fisone G,KIEHN O (2017). Midbrain circuits that set locomotor speed and gait selection. Nature 553(7689):455-460 – Article.
3. Cregg M J, Leiras R, Montalant A, Wanken P, Wickersham R I, KIEHN O (2020). Brainstem neurons that command mammalian locomotor asymmetries. Nature Neuroscience, 23(6):730-740.

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