



ONSA/CBIR セミナー

ドーパミン関連疾患への新しい知見ードーパミン機能に関与する小脳システム

(New Insights for Dopamine-Related Disorders – The Cerebellar System Contributing to the Dopamine Function)

演者

吉田 純一 (Junichi Yoshida)

アルバートアインシュタイン医科大学

(Albert Einstein College of Medicine, NY, USA)

日時

2022 年 9 月 13 日(火) 17:30 開始

会場

ハイブリッド開催 (対面&オンライン)

会場 : M&D タワー18 階 小会議室 1

(会場が小さいのでオンライン参加をお勧めします)

参加登録はこちらから

<https://forms.gle/14soqqfmp3af15MU6>

参加登録  
QR コード



講演要旨

発表言語は日本語です (Seminar will be in Japanese)

Learning better motor action and behavior is the essential function of the animal brain. The cerebellum (Cb) contributes to motor learning through the computation of the instructive error signal as the dopaminergic neurons in the substantia nigra pars compacta (SNc) and ventral tegmental area (VTA) do it through the computation of the reward prediction error (RPE). However, it was unclear how the Cb and dopaminergic computations are integrated and collaboratively address the motor learning process. Recent studies found that the Cb also encodes reward-related information like the dopaminergic neurons. And our laboratory also reported the Cb has excitatory monosynaptic projections to the SNc and VTA. Given these previous studies, we hypothesized the Cb sends reward-related information to the dopaminergic systems and modifies their RPE computations. We addressed this subject using fiber photometry and optogenetics in a head-fixed Pavlovian mouse. We observed the Cb-SNc/VTA projections were activated not only at reward-predictive timing but also at reward delivery, whose activation amplitude was dependent on the value of the reward. In addition, opto-inhibition of the Cb projections in the dopaminergic system affected dopamine release dynamics in a striatal region. These results indicate that reward-related information in the cerebellum could contribute to the motor learning process through modification of the SNc/VTA dopaminergic RPE computation, and the Cb might have an impact on Parkinson's disease and substance abuse via this cerebellar-dopaminergic pathway because the SNc and VTA dopaminergic neurons are considered central parts of these diseases.

連絡先 : 細胞生理学分野 磯村 宜和 (isomura.phy2@tmd.ac.jp)

ONSA (代表・神経機能形態学分野 寺田 純雄)

事務局 : 脳統合機能研究センター 味岡 逸樹 E-mail: iajioka.cbir@tmd.ac.jp