



TOHOKU
UNIVERSITY

生命科学セミナー

(植物生殖遺伝分野担当: 第30回)

(生命科学研究科単位認定セミナー: 1ポイント)

日時: 2017年7月7日(金) 17:00~18:00

場所: 生命科学研究科・総合研究棟 1階・講義室 B

Prof. Michael E. Adams

(Departments of Entomology and Cell Biology & Neuroscience, UC Riverside)

Endocrine Network Essential for Reproductive Success and Courtship Memory in *Drosophila melanogaster*

Ecdysis-triggering hormone (ETH) was originally discovered and characterized as a molt termination signal through its regulation of the ecdysis sequence. Inka cells, the sole source of ETH, persist into adulthood in *Drosophila melanogaster*. We find that as an obligatory allatotropin in male and female flies, ETH plays critical roles in reproduction and courtship memory. ETH signaling deficits lead to sharply reduced JH levels and consequent reduction of yolk deposition and egg production. Expression of ETH and ETH receptor genes is in turn dependent on ecdysone; RNAi silencing of ecdysone receptors (EcR) specifically in Inka cells reduces fecundity. Disruption of ETH signaling also creates deficits in both short-term (STM) and long-term (LTM) courtship memories involving distinct neuronal circuits. On the other hand, increased ETH release not only improves LTM performance, but also reduces the training period necessary for memory formation. Our findings indicate that canonical developmental functions of 20E, ETH, and JH during juvenile stages are repurposed during adulthood for regulation of reproductive physiology and behavior.

問い合わせ先: 生命科学研究科・植物生殖遺伝分野・渡辺 (nabe@ige.tohoku.ac.jp) までお願いします。

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