

MIMS現象数理カフェセミナー

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場所: 中野キャンパス8F談話室

Stress-dependent regulation of innate visually guided behavior in the ant *Camponotus japonicus*

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Abstract : Innate behaviors are often considered hard-wired, yet they can be flexibly regulated by context. Here, we examined the plasticity of beacon-aiming, an innate visually guided behavior reported in many insects, in which individuals spontaneously approach a conspicuous visual landmark. A comparative analysis of six ant species showed that workers of *Camponotus japonicus* did not exhibit beacon-aiming under standard walking conditions, whereas most of the other species examined did. However, this behavior was induced when *C. japonicus* workers experienced adverse conditions, including swimming or wading on water, moving on a non-aqueous liquid surface, walking upside down, or exposure to strong upward airflow. In contrast, weak upward airflow did not induce beacon-aiming. Further experiments involving sequential substrate transitions (land-to-water and water-to-land) revealed that beacon-aiming emerged gradually prior to the transition into an adverse substrate (water) and persisted for at least several seconds after the transition to a non-adverse substrate (land). These findings demonstrate that beacon-aiming can be plastically induced by stress-dependent regulation.



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