

東京大学 グローバル COE 『統合生命学』 特別セミナー

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東京大学大学院 理学系研究科 生物化学専攻

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演者 : Dr. Samer Hattar

Assistant Professor

Departments of Biology and Neuroscience (JHMI),

Johns Hopkins University (Baltimore, USA)

演題 : Rod photoreceptor retinal circuits impinge on melanopsin  
ipRGCs for influencing circadian photoentrainment

日時 : 平成 22 年 6 月 4 日 (金) 17 : 00 ~ 18 : 30

場所 : 東京大学理学部 3 号館 4 階 416 号室

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The discovery of atypical ganglion cell photoreceptors (melanopsin containing intrinsically photosensitive retinal ganglion cells; ipRGCs) in the mammalian retina has greatly advanced our understanding of how light influences several non-image forming visual functions independent of image formation. Some of the non-image forming functions are the adjustment of our internal circadian rhythms to the solar day, which influence our mood, alertness and even learning and memory. We have studied extensively the contribution of outer retinal photoreceptors to the regulation of circadian photoentrainment. We find that rods are the predominant photoreceptor type responsible for circadian photoentrainment from the outer retina, with cones playing a minor role in this function. We further determine how the rod photoreceptors send this information to ipRGCs at different light intensities. Our data reveal an unappreciated role for rods in circadian photoentrainment and determine the retinal circuits of how this response is achieved.

Güler AD, Ecker JL, Lall GS, Haq S, Altimus CM, Liao HW, Barnard AR, Cahill H, Badea TC, Zhao H, Hankins MW, Berson DM, Lucas RJ, Yau KW, Hattar S. (2008) Melanopsin cells are the principal conduits for rod-cone input to non-image-forming vision. *Nature* **453**, 102-5.

世話人: 理学系研究科 深田 吉孝 (内線 24381)