

BDR SEMINAR in Kobe

"CDB SEMINAR" and "QBiC SEMINAR" have been renamed "BDR SEMINAR".

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16:00-17:00, Auditorium C1F

Roles of Orexin Neurons at the Interface of Systems that regulate Emotion and Arousal/Vigilance

Summary

Animals shift their sleep-wakefulness state according to their internal state and the external environment by utilizing three major influential elements, i.e., homeostatic, circadian and allostatic factors. Among them, allostatic factors include the nutritional state and external environment that triggers emotion. For example, stressful and emotionally-salient situations such as encountering predators, adapting to novel situations or expecting a reward require animals to shift their behavior to a vigilant state, along with alteration of their physiological condition through modulation of autonomic and endocrine functions. Studies of efferent and afferent systems of orexin-producing neurons have shown that the orexin neuronal system has close interactions with systems that are involved in the regulations of emotion, energy homeostasis, reward, and arousal. Studies by our group and others have suggested that orexin neurons are activated during the behavioural expression of fear or in response to cues associated with danger or reward. These observations suggest that orexin neurons are involved in control of vigilance states in response to outer environment. On the other hand, orexin system affects expression of behavioral response against outer environment via control of monoaminergic neurons, such as noradrenergic neurons in the locus coeruleus and serotonergic neurons in the dorsal raphe. I will discuss functional interplay between the limbic system and arousal system, and involvement of orexin and orexin receptors in these interactions.



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