



Simposio Internacional / *International Symposium:*

## Patología del Sueño: de la Neurobiología a las manifestaciones sistémicas

*Sleep disorders: from Neurobiology to Systemic Consequences*

Madrid, 18 y 19 de enero de 2018 / *January 18-19, 2018*

### ABSTRACT

#### **Papel de las hipocretinas y de otros sistemas activadores en el mantenimiento de la vigilia**

*The role of hypocretins and other activating systems in the regulation of wakefulness*

Luis de Lecea

Stanford University, Stanford, CA, USA

The arousal construct underlies a spectrum of behaviors that include sleep, exploration, feeding, sexual activity and adaptive stress. Pathological arousal conditions include stress, anxiety disorders, and addiction. In the past few years we have used optogenetics to interrogate neuronal circuits underlying transitions between arousal states. The neuropeptide hypocretin, also known as orexin, has been considered a Rosetta stone to decipher the mechanisms of sleep regulation, as its deficiency leads to disrupted sleep architecture associated with narcolepsy. In my presentation, I will :

- Discuss how the hypocretin system makes the decisions about when to mark the transition between sleep and wakefulness.
- Describe three levels of integration of Hcrt neurons that receive inputs from circadian, metabolic and limbic regions.
- Characterize outputs of Hcrt neurons, that include norepinephrine neurons in the locus coeruleus, histaminergic neurons in the hypothalamus, and cholinergic neurons in the basal forebrain.
- Present new data on the role of mesencephalic dopaminergic neurons in vigilance state transitions
- Discuss a theoretical framework that integrates all of these concepts and makes it possible to predict transitions between vigilance states.

Together, the data generated using cell-type specific interrogation of genetically identified neuronal circuits associated with arousal state will be essential to develop treatments of sleep disorders with high precision.

\*Todos los derechos de propiedad intelectual son del autor. Queda prohibida la reproducción total o parcial de la obra sin autorización expresa del autor.

© FUNDACIÓN RAMÓN ARECES. Todos los derechos reservados.

*\*All intellectual property rights belong to the author. Total or partial reproduction of the work without express permission of the author is forbidden. © FUNDACIÓN RAMÓN ARECES. All rights reserved.*