



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

### **Narcolepsia, ¿una enfermedad autoinmune?**

*Narcolepsy, an autoimmune disorder?*

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Narcolepsy is one of the more common medical causes of sleepiness, and in the last decades, researchers have learned much about what goes wrong in the brain to cause the sleepiness and cataplexy that characterize this disease. All people with narcolepsy feel sleepy across the day, and they can easily fall asleep at school, at work and when driving. In addition, they often have cataplexy – sudden episodes of muscle weakness that are triggered by strong, usually positive, emotions such as laughing at a great joke or unexpectedly seeing a friend. This paralysis normally occurs only during Rapid Eye Movement (REM) sleep to keep people from acting out their dreams, but for unclear reasons, it can occur during wakefulness in narcolepsy.

Almost 20 years ago, sleep researchers made the remarkable discovery that narcolepsy is caused by a selective loss of the brain cells that make signaling molecules known as orexins (also called hypocretins). Orexins promote wake and regulate REM sleep, and when the orexin-producing brain cells die off, people have persistent sleepiness and poor regulation of REM sleep.

Dr. Scammell's lab has studied the brain circuits that underlie these symptoms. They have found that orexin signaling through brain cells that make histamine is crucial for keeping animals awake. In addition, they have found that cataplexy is likely triggered by neural signals that arise in the medial prefrontal cortex and amygdala, brain regions involved in emotional reflexes. For example, increasing activity in part of the amygdala can worsen cataplexy in a mouse model of narcolepsy, whereas reducing activity has the opposite effect.

This research is helping identify the specific circuits in the brain that regulate sleepiness and cataplexy, bringing us closer to new therapies to help patients with narcolepsy.

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