



Talks by rising stars of neuroscience

Norepinephrine links astrocytic activity to regulation of cortical state

Michael Reitman - Poskanzer Lab

(UCSF)

Cortical state, defined by the synchrony of population-level neuronal activity, is a key determinant of sensory perception. While many arousal-associated neuromodulators—including norepinephrine (NE)—reduce cortical synchrony, how the cortex resynchronizes following NE signaling remains unknown. Using in vivo two-photon imaging and electrophysiology in mouse visual cortex, we describe a critical role for cortical astrocytes in circuit resynchronization. We characterize astrocytes' sensitive calcium responses to changes in behavioral arousal and NE, identify that astrocyte signaling precedes increases in cortical synchrony, and demonstrate that astrocyte-specific deletion of *Adra1A* alters arousal-related cortical synchrony. Our findings demonstrate that astrocytic NE signaling acts as a distinct neuromodulatory pathway, regulating cortical state and linking arousal-associated desynchrony to cortical circuit resynchronization.

Event link:

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