

Psychiatry Grand Rounds

WCM Department of Psychiatry

Psychology CE Announcement

ENDOCANNABINOID MODULATION OF STRESS REACTIVITY AND ADAPTATION

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11 AM - 12 PM



Live Online

ABSTRACT

Endogenous cannabinoids (eCBs) are lipid-based neuromodulators that regulate presynaptic neurotransmitter release at central synapses and influence a broad spectrum of homeostatic, affective, and hedonic biobehavioral functions. Emerging preclinical and human experimental evidence highlights a critical role for eCB signaling in modulating stress reactivity, facilitating stress adaptation, and shaping aversive associative learning. We will discuss synaptic and circuit-level mechanisms through which eCBs contribute to stress resilience, their capacity to mitigate the adverse effects of stress exposure and promote the extinction of aversive memories. These findings suggest that pharmacological enhancement of eCB signaling may offer a novel therapeutic strategy for stress-related neuropsychiatric disorders. Moreover, eCB-deficient states may represent a stress-susceptibility endophenotype, providing a potential biomarker for vulnerability to psychopathology. Collectively, these studies offer new insights into the central mechanisms governing stress regulation and adaptation, with implications for understanding and treating stress-related conditions.

SPEAKER

Dr. Sachin Patel is the Lizzie Gilman Professor and Chair of the Department of Psychiatry and Behavioral Sciences at the Feinberg School of Medicine. He previously served as the Blakemore Professor and Director of the Division of General Psychiatry at Vanderbilt University Medical Center. His clinical work focuses on treating substance use disorders and co-occurring mental illnesses. Dr. Patel's research examines how endogenous cannabinoid signaling regulates neurobehavioral processes and the role of cannabis constituents in psychiatric disorders. His work has been continuously funded and published in leading journals, including *Nature Neuroscience*, *Neuron*, *Molecular Psychiatry*, and *Nature Communications*.

LEARNING OBJECTIVES

1. List the molecular elements comprising endogenous cannabinoid signaling systems.
2. Discuss the role of endogenous cannabinoids plays in regulating synaptic transmission.
3. Describe 3 key research findings supporting a role for endogenous cannabinoid in the regulation of stress adaptation

REFERENCES

1. Scheyer, A., Yasmin, F., Naskar, S., & Patel, S. (2022). Endocannabinoids at the synapse and beyond: implications for neuropsychiatric disease pathophysiology and treatment. *Neuropsychopharmacology*, 48(1), 37–53. <https://doi.org/10.1038/s41386-022-01438-7>
2. Bedse, G., Hill, M. N., & Patel, S. (2020). 2-Arachidonoylglycerol Modulation of anxiety and stress Adaptation: From grass roots to novel therapeutics. *Biological Psychiatry*, 88(7), 520–530. <https://doi.org/10.1016/j.biopsych.2020.01.015>
3. Hill, M. N., Campolongo, P., Yehuda, R., & Patel, S. (2017). Integrating Endocannabinoid Signaling and Cannabinoids into the Biology and Treatment of Posttraumatic Stress Disorder. *Neuropsychopharmacology*, 43(1), 80–102. <https://doi.org/10.1038/npp.2017.162>

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