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**MEETING ABSTRACT**

**A5.2**

**Phasic and tonic dopamine neurotransmission may be a continuum**

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Both phasic and tonic modes of neurotransmission are implicated in critical functions assigned to dopamine, but they are generally treated as separate entities. Our findings bridge the multiple timescales of dopamine neurotransmission by demonstrating that phasic burst stimulation of VTA dopamine neurons produces a prolonged post-burst increase of extracellular dopamine in nucleus accumbens and prefrontal cortex. This prolonged elevation is not due to spillover from the stimulation surge but depends on impulse flow-mediated dopamine release. We identified Rho-mediated internalization of dopamine transporter as a mechanism responsible for prolonged availability of actively released dopamine. These results demonstrate that phasic and tonic dopamine neurotransmission can be a continuum and may explain why both modes of signaling are critical for motivational and cognitive functions associated with dopamine.

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