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Sommario/riassunto	<p>Decades of research have identified a role for dopamine neurotransmission in prefrontal cortical function and flexible cognition. Abnormal dopamine neurotransmission underlies many cases of cognitive dysfunction. New techniques using optogenetics have allowed for ever more precise functional segregation of areas within the prefrontal cortex, which underlie separate cognitive functions. Learning theory predictions have provided a very useful framework for interpreting the neural activity of dopamine neurons, yet even dopamine neurons present a range of responses, from salience to prediction error signaling. The functions of areas like the Lateral Habenula have been recently described, and its role, presumed to be substantial, is largely unknown. Many other neural systems interact with the dopamine system, like cortical GABAergic interneurons, making it critical to understand those systems and their interactions with dopamine in order to fully appreciate dopamine's role in flexible behavior. Advances in human clinical research, like exome sequencing, are driving experimental hypotheses which will lead to fruitful new research directions, but how do (or should?) these clinical findings inform basic research? Following new information from these techniques, we may begin to develop a fresh understanding of human disease states which will inform novel treatment possibilities. However, we need an operational framework with which to interpret these new findings. Therefore, the purpose of this Research Topic is to integrate</p>

what we know of dopamine, the prefrontal cortex and flexible behavior into a clear framework, which will illuminate clear, testable directions for future research.

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