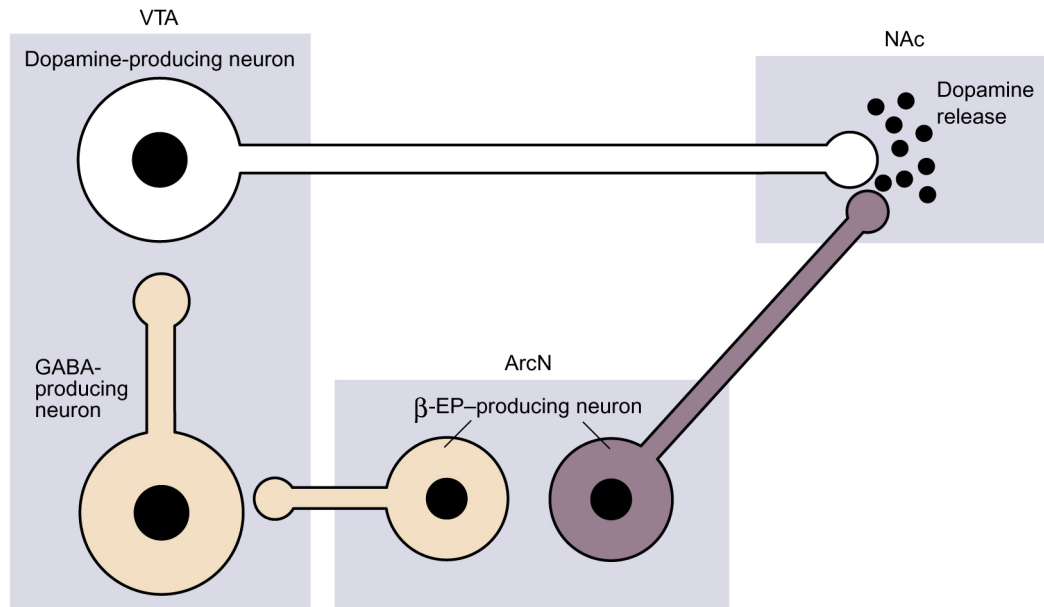


Schematic of the possible influence of β -endorphin (β -EP) on dopamine release in the nucleus accumbens (NAc)



Dopamine is a brain chemical (i.e., neurotransmitter) involved in reward and reinforcement processes, and the NAc is a brain region involved in mediating alcohol's positive reinforcing effects. β -EP is produced in the arcuate nucleus of the hypothalamus (ArcN) by nerve cells (i.e., neurons) that extend to other brain regions, including the ventral tegmental area (VTA) and the NAc. β -EP can stimulate dopamine release in the NAc through two mechanisms. First, it can interfere with (i.e., inhibit) neurons in the VTA that produce gamma-aminobutyric acid (GABA), a neurotransmitter that normally inhibits the dopamine-producing neurons in the VTA. Inhibition of GABA production leads to increased dopamine production and release in the NAc. Second, β -EP can directly stimulate (i.e., excite) dopamine-producing neurons in the NAc. Alcohol stimulates β -EP release in both the VTA and NAc. Purple structures indicate excitatory mechanisms, and gold structures indicate inhibitory mechanisms. SOURCE: Adapted from Jamensky and Gianoulakis 1997.

Source: Gianoulakis, C. Alcohol-seeking behavior: The roles of the hypothalamic-pituitary-adrenal axis and the endogenous opioid system. *Alcohol Health & Research World* 22(3):202–210, 1998.

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