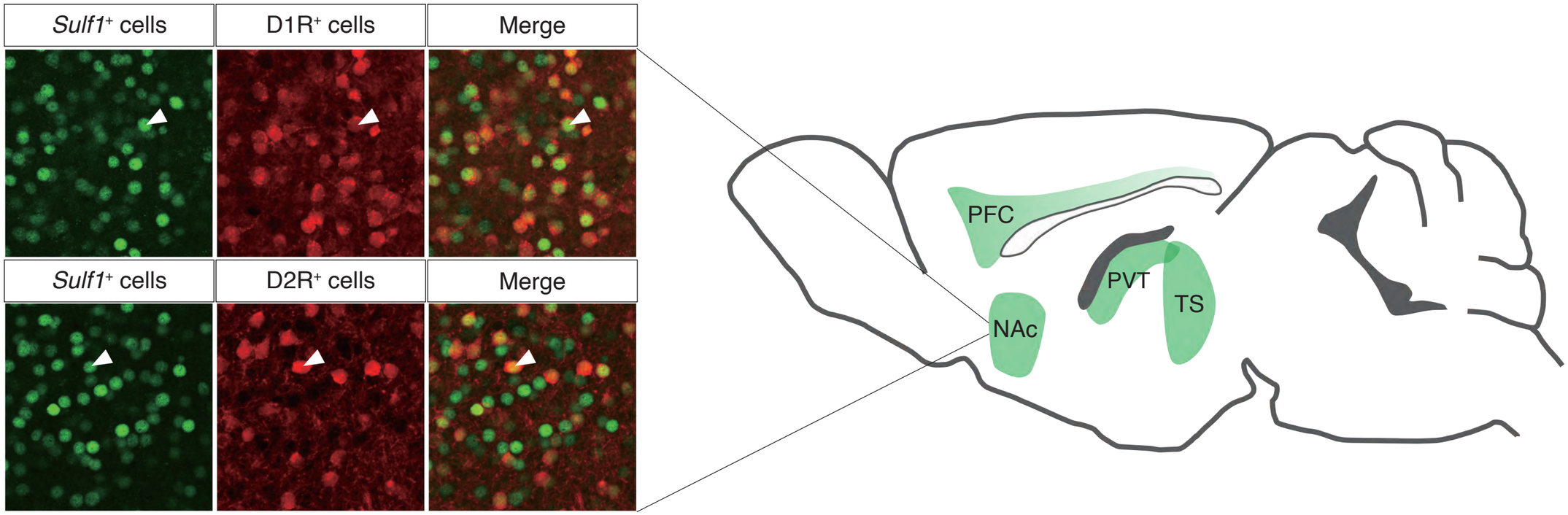
From Department of Molecular Neurobiology

Expression of Heparan Sulfate Endosulfatases in the Adult Mouse Brain: Co-expression of *Sulf1* and Dopamine D1/D2 Receptors



Sulf1 is highly expressed in the nucleus accumbens (NAc), tail of the striatum (TS), paraventricular nucleus of the thalamus (PVT), and prefrontal cortex (PFC; right figure). The left figure shows co-expression of Sulf1 (green; immunostaining of β-gal knocked in the *Sulf1* gene) and D1R/D2R (red; labeled by injection of AAV-DIO-mCherry in Drd1-Cre or Drd2-Cre mice) in the nucleus accumbens. Most of Sulf1 expression is overlapping with D1R or D2R expression.

Sulf1 and Sulf2 are extracellular enzymes that regulate cell signaling through desulfation of heparan sulfate. They are implicated in cancer progression and neural development, but their roles in the mature brain remains unknown. To gain an insight into their brain functions, we examined their expression in the adult mouse brain using *in situ* hybridization and immunohistochemistry. We found that *Sulf1* is highly expressed in the nucleus accumbens, tail of the striatum, paraventricular nucleus of the thalamus, and prefrontal cortex. In these regions, *Sulf1* is expressed in the neurons expressing dopamine D1 receptor (D1R) and/or D2R, suggesting the possible roles of Sulf1 in dopaminergic neurotransmission.

References: K Miya et al., ***Frontiers in Neuroanatomy*** 2021;15:726718
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