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- Prenatal stress (PS) is linked to increased risk for neuropsychiatric disorders in offspring, including autism spectrum disorder (ASD)¹
- Many with ASD show enlargement and hyperconnectivity of the *dorsal* striatum²
- Medium spiny neurons (MSNs) are the principal neurons of the
- striatum, with Drd1 & Drd2 subtypes • Drd2 antagonism can ameliorate some ASD-like behaviors in mouse models⁴
- Pharmacological *manipulation of* **MSNs** during interval timing results in delayed response times and altered time-related neural activity⁵

Hypothesis: PS will lead to:

- 1. Changes in **striatal gene expression**, especially in the domain of synapse function.
- 2. Striatal-dependent **behavioral deficits**, including in procedural learning and interval timing.
- 3. Altered physiological activity of MSNs during interval timing.

Methods

Prenatal stress (PS): 45-min sessions of restraint & bright light, 3x daily, from embryonic day 12 through birth in CD-1 mice.



tSNE



The effects of prenatal stress on distinct dorsal striatal cell types and autism spectrum disorder-relevant behaviors in mice

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IPA comparison analysis was performed on the cell types with significant pathway enrichment analysis results, showing **consistent changes across cell types**.









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6. Bruce, R. A., Weber, M. A., Volkman, R. A., Oya, M., Emmons, E. B., Kim, Y., & Narayanan, N. S. (2021). Experience-related enhancements in striatal temporal