### Background and Rationale

- Stereotypies (repetitive, unvarying, and seemingly goal-less behaviors) are cardinal to several neuropsychiatric and neurodevelopmental disorders and are associated with distressing affective states.
- Spontaneous stereotypy in animals is a well-validated model for human stereotypy including shared pathophysiology of the pre-motor corticostriatal loop and behavioral deficits.
- Despite extensive literature examining stereotypy, the underlying developmental pathophysiology is unknown.
- Compulsive behaviors, which involve dysfunction of an adjacent corticostriatal loop, are strongly correlated with REDOX imbalance (oxidative stress), and symptom severity is reduced via corticostriatal loop.

### Does GSH predict severity of stereotypy?

| GSH predicts severity of stereotypy, but relationship diminishes with age. |

### Is there a more specific and sensitive proteomic biomarker profile?

**Proteomic hits are validated by association with disorders characterized by stereotypy.**

- Plasma-based total GSH is predictive of severity of stereotypy, but the predictive nature diminishes with age.
- The relationship between GSH and stereotypy in mice parallels the relationship between GSH and compulsive behaviors in mice and humans.
- Proteomic hits tightly correlate with dopamine, REDOX processes, and disorders characterized by stereotypy.
- Together, these results support a REDOX imbalance developmental pathophysiology for stereotypy.

### Future Directions:

1. Translate findings to other species (e.g., primates and humans).
2. Determine if antioxidant therapies are effective for stereotypy as they are for compulsive behaviors.

### References:


*Proteomic insights into the developmental pathophysiology of stereotypy.*

Kendall M. Coden1,2, Kaleigh J. Beacham3,4, Beatriz E. Stix-Brunell1, Roberta Moorhead1, Kyna A. Byrd1, Joanna N. Baker1, Jerome T. Geronimo1, Karen J. Parker2,3, Joseph P. Garner1,2

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