Background

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Primary Research Areas

- Functional Macrocircuitry of:

1) Reward-related learning (esp. social learning)

2) Emotion regulation

Key Questions

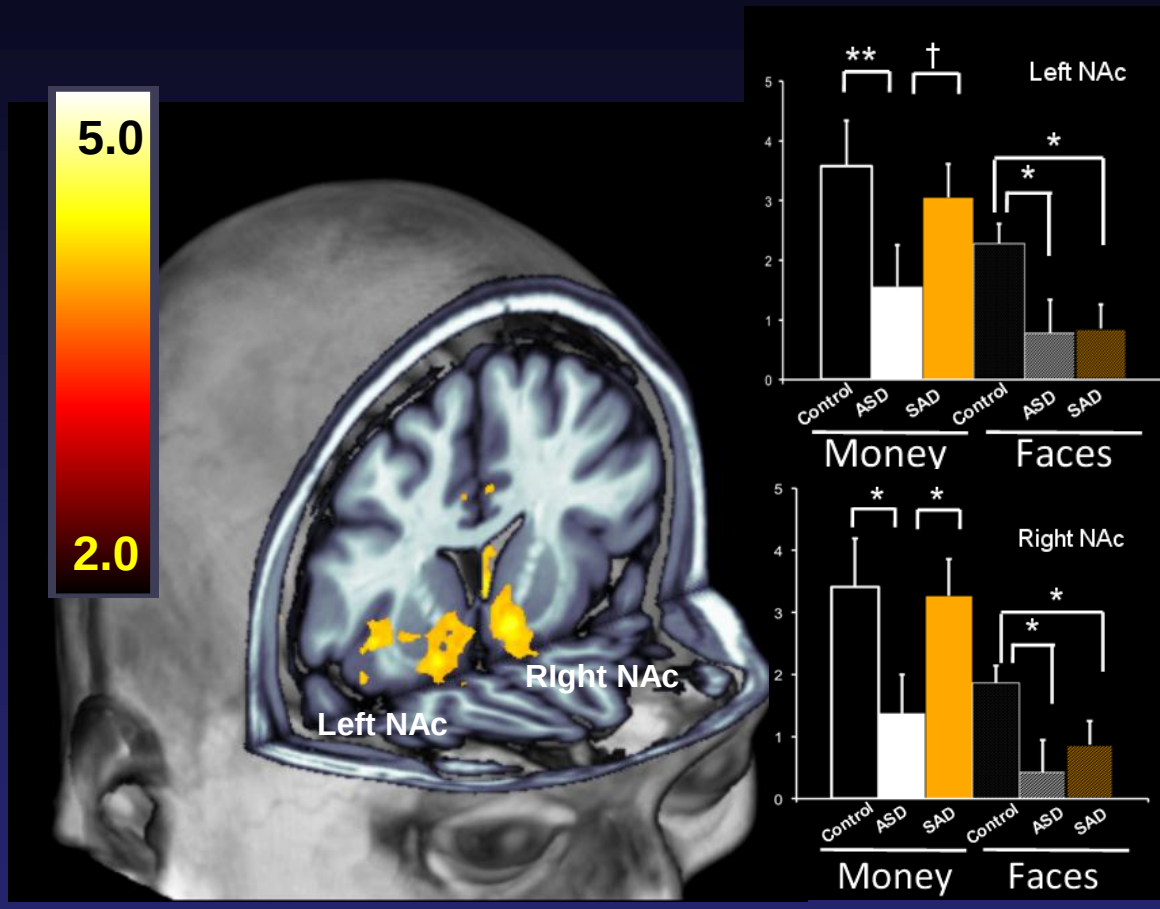
- In ASD, how is social dysfunction represented in the functional organization of the brain?
- Can fMRI and functional connectivity by fMRI (fcMRI) be used to create credible network models of information flow?
- What are the effects of cognitive reappraisal of social information in ASD?

Findings To Date

- Reward Learning

- In ASD, reward-related structures in the brain do not respond to social stimuli

- Domain-general deficit.



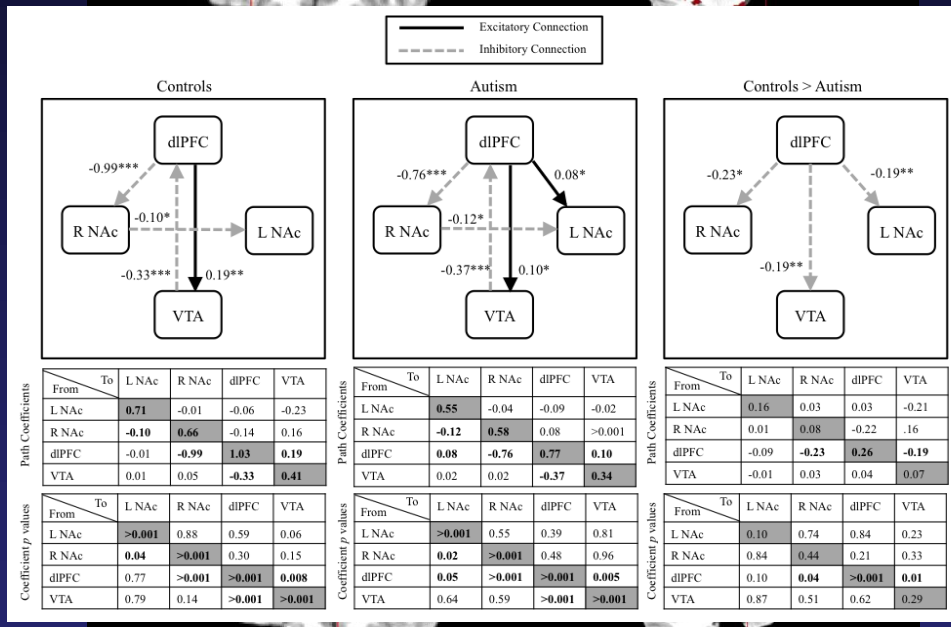
* $p \leq .05$
** $p \leq .01$
† $p = 0.07$

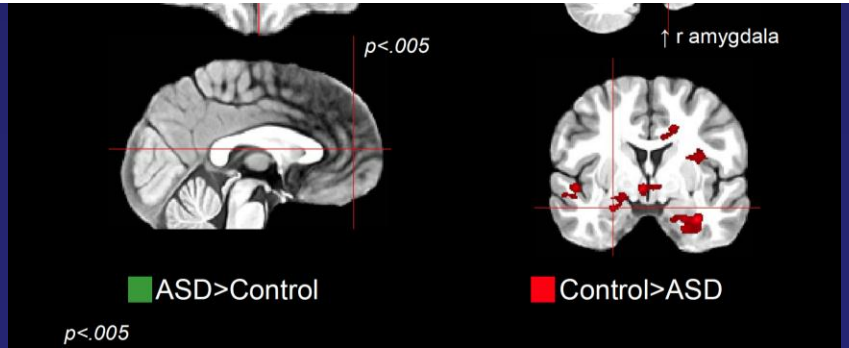
Findings To Date

- Emotion Regulation

- People with ASD struggle with emotion regulation.
- Problems in ASD are linked to altered prefrontal control of dopamine-rich areas of the midbrain and ventral striatum.
- Difficulty modifying function of emotion-generative structures
- Suggests faulty connectivity

- Hypotheses about a specific candidate gene implicated in this circuit.





Current Resources / Relationships

- We have expertise in:
  - Behavioral Characterization of ASD
  - All aspects of fMRI data collection & analysis
  - Network modeling of fMRI data
- We would benefit from:
  - Expertise in Genetics
  - Expertise in brain-computer interface (BCI)