Differences Between Neural Networks in Young Adult Males with Family History of Alcohol Use Disorder

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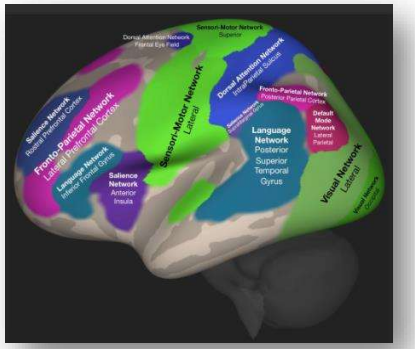
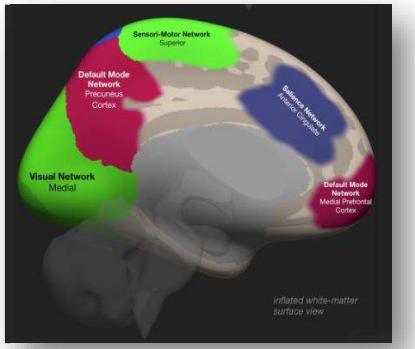
Are there differences in inter- and intranetwork connectivity of neural networks in young adults with and without family history of alcohol use disorder?

- Participants included young adults (18-22) without current high risk alcohol use
- Participants were grouped by family history of alcohol use disorder (AUD) and sex assigned at birth
- Regions of interest were taken from the default mode network, salience network, and dorsal attention network

Regions of Interest

(Images taken from the CONN Network Atlas)





References:

Nieto-Castanon, Alfonso. (2020). Handbook of functional connectivity Magnetic Resonance Imaging methods in CONN. 10.56441/hilbertpress.2207.6598.

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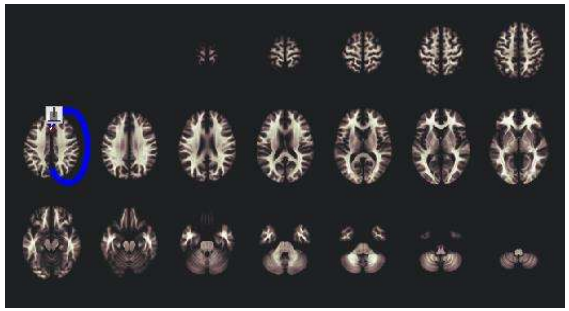
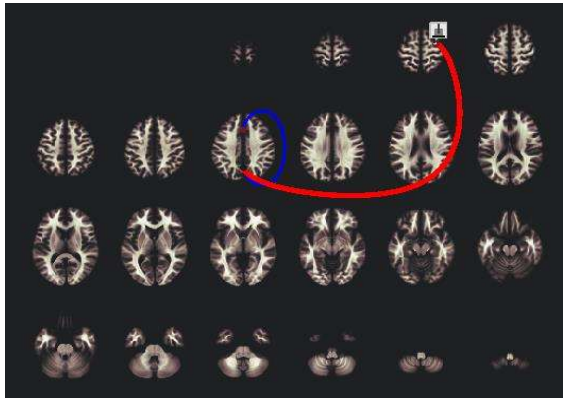
Family history of AUD females > Family history of AUD males:
Greater negative connectivity between **precuneus cortex** (default mode network) and **anterior cingulate cortex** (salience network)
(uncorrected $p < 0.001$, p-FDR = 0.0084)



No family history of AUD males > Family history of AUD males:

- Greater negative connectivity between **precuneus cortex** (default mode network) and **anterior cingulate cortex** (salience network) (uncorrected $p = 0.0057$, p-FDR = 0.040)
- Greater positive connectivity between **precuneus cortex** (default mode network) and **right frontal eye fields** (dorsal attention network) (uncorrected $p = 0.0044$, p-FDR = 0.040)



Conclusions: Even in the absence of high-risk alcohol intake, young adult males with family history of AUD demonstrate decreased intranetwork connectivity between the dorsal attention, salience, and default mode networks. These differences may represent a neurological biomarker for AUD which is specific to males.