**Exploring the Spatiotemporal Dynamics of Social Touch Perception and Isolation on Stress Resiliency**

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**3) LFP Machine learning Network Analysis**

VHipp

CeA

BLA

PFC

NAc

VTA

OV

**Methods**

1) Implantation

2) Experimental Timeline

3) LFP Machine learning Network Analysis

**Results “Electome Factor 1”**

**Results “Electome Factor 2”**

**References**

**Background**

**Social Touch Hypothesis?**

**Affective Touch**

- Emotional regulation by modulating the maladaptive physiological responses to negative stress and promoting feelings of safety and security.

**Discriminative Touch**

- Low threshold Mechanoreceptors
- Located in the Hairy Skin
- Gentle touch, pressure, stroking
- Mildly thermosensitive (Body temp)

How does manipulation of periphery social touch neurons, impact electrical networks in the CNS post stress?

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**Results “Electome Factor 1”**

**Results “Electome Factor 2”**

**Behavior Results**

**Behavioral Test Grooming Time**

**Figure 2:** A) Cross plot of Electome Factor 1. This plot depicts the brain regions and the power/coherence measures between them that make up the network. (B) EF1 score measured during forced interaction test, pre-stress, between Cre and WT animals. EF1 score measured during sucrose splash test between Cre and WT animals. (C) EF1 score measured during forced interaction test, post stress, between Cre and WT animals. (D) Two way ANOVA comparison of EF1 score in the home cage and splash condition during the sucrose splash test between Cre and WT animals. EF1 score between conditions was significantly different (p<0.001). EF1 score was significantly different across genotypes.

**Figure 3:** A) Cross plot of Electome Factor 2. This plot depicts the brain regions and the power/coherence measures between them that make up the network. (B) EF2 score measured during forced interaction test, pre-stress, between Cre and WT animals. EF2 score measured during sucrose splash test between Cre and WT animals. (C) EF2 score measured during forced interaction test, post stress, between Cre and WT animals. (D) Two way ANOVA comparison of EF2 score in Cre and WT animals on day 1 (pre-stress FIT) vs day 6 (post stress FIT). EF2 score between day 1 and day 6 was significantly different (p<0.001). EF2 score was significantly different across genotypes (p<0.0001).

**Figure 4:** B) Juv direct interaction duration

**Figure 5:** B) Juv direct interaction duration

**Figure 6:** Experimental timeline for social isolation paradigm. Animals will be isolated for 14 days and implanted with electrodes. LFP data will be recorded during initial FIT, sucrose splash, and final FIT. DJI and NSF behavioral assays will also be observed.

**Conclusions**

- EF1: Cre animals showed a significant increase in electome factor score post sucrose splash test (acute stressor).
- EF2: Cre animals showed a significant decrease in electome factor score on Day 6 when compared to WT controls
- Cre animals showed a significant decrease in grooming time during the sucrose splash test

**Future Directions**

Future directions aim to investigate if social isolation evokes the same behavioral and electrical network phenotypes as genetic manipulation.

**Acknowledgments**

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