Key Concepts and Definitions:
- Stress: A psychological or physical stimulus that can cause a physiological response in an organism.
- Social Reorganization: The process by which social dynamics within a group change over time.
- Immune System: The body's defense mechanism against pathogens.
- Corticosterone: A steroid hormone involved in the stress response and immune function.

Hypotheses:
- Females in SR groups will have significantly higher levels of circulating corticosterone than control groups.
- SR groups had significantly higher corticoestrogen concentrations at week 2 (P < 0.05) and week 2 endpoints (P < 0.01) (Fig. 3a). Week 4 concentrations were also significantly higher than baseline (P < 0.01) or the control groups (P < 0.001) (Fig. 3a).
- Age and EPGD status were not found to be significant factors.
- Immunofluorescence analysis showed a significant difference between the SR and control groups in weeks 2 (P < 0.05) and week 4 endpoints (P < 0.001) (Fig. 4c).

Results:
- There was no significant difference between enriched and non-enriched groups at week 1 (P > 0.05).
- Basal plasma corticosterone concentrations across the study showed significant differences in week 1 parameters measured or test performed at beginning (day 1) of indicated week; M = parameter measured or test performed at each endpoint. Corticosterone levels fluctuate throughout the day and are at their lowest in the morning (8). A competitive ELISA assay (Abnova, Walnut, CA) was completed to analyze the levels of circulating corticosterone in the blood.
- At the end of week 2, the two remaining SR groups were randomized into EE and control groups for an additional 4 weeks.
- Mice were sacrificed at the end of their respective periods. Brains were then removed and hippocampi were isolated. Serial sagittal sections of 60 µm were taken and subjected to neurohistochemistry.
- There were no significant differences found for CA1 and CA3, but not for CA4 week 4 in comparison at hippocampal regions in control vs. SR female mice (P < 0.05) (Fig. 4c) and P < 0.001 (Fig. 4c).

Table 1: Research design summary.

<table>
<thead>
<tr>
<th>Week</th>
<th># of Mice</th>
<th>Weight</th>
<th>Heart Rate</th>
<th>Respiration</th>
<th>Morris Water Maze</th>
<th>Blood Draw</th>
<th>Corticosterone</th>
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<tbody>
<tr>
<td>1</td>
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Discussion:
- It is possible that factors within the trait are responsible for this discrepancy and remain to be discovered.
- The lack of correlation between the Mouse Water Maze and the immunological results suggests that behavioral impairments may be initially more nuanced or take additional time to appear from neurological effects of reorganization stress.
- Higher corticosterone levels in female mice contradict previous studies (1, 2) but it is possible that factors within the trait are responsible for this discrepancy and remain to be discovered.

References:
- Several references were cited throughout the paper, detailing various studies and findings relevant to the research.

Table 2: Summary of results.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Week 1 End</th>
<th>Week 2 End</th>
<th>Week 4 End</th>
<th>Week 6 End</th>
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<tr>
<td>Vasoconstriction</td>
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<td>Basal Plasma Corticosterone</td>
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<td>Immunofluorescence - Week 1</td>
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<tr>
<td>Immunofluorescence - Week 2</td>
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Figures:
- Figures 1-4 depict various aspects of the study, including but not limited to, experimental design, results, and data visualization.

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Special Thanks:
- Acknowledgments or special thanks may be included to acknowledge contributions or individuals involved in the research.

Figures:
- Figures 1 and 2 depict the experimental setup and design, including group allocation and study timeline.
- Figures 3 and 4 illustrate the results and data distribution, highlighting significant differences and trends.

Environmental Enrichment:
- Environmental enrichment (EE) involves providing a variety of objects that stimulate sensory, motor, social, and cognitive interactions in caged animals.

Social Reorganization Model:
- Fedorczyk and Sheridan reported significant mortality in male mice that were socially reared and then subjected to the influenza virus. Previous studies had focused solely on the effects of rearing stimuli on immune function.

Stress Response:
- Hans Selye was the first to describe stress and its biological implications.
- The HPA axis is the primary pathway for the stress response (Fig. 1). The axis functions as a negative feedback loop, with GCs feeding back to the receptors in the pituitary gland and the hypothalamus in order to return the organism to its baseline.

Concepts and Definitions:
- Chronic stressors can have a significant negative impact on the physiological functioning of an organism (9). The type of stressor is also important. The HPA axis tends to accommodate to homeostatic stressors (incidences of the same chronic stressor) but not heterotypic stressors (chronic novel stressors) may not have the same impacts (10).
- Glucocorticoids are released as part of the hormone signaling in the stress response. GC receptors are ubiquitous throughout the brain and limbic structures, including the hippocampus (2, 3).

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