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Recommended Citation

Garcia, Laura Emma; Garcia, Mariela; Dominguez, Fernando; and Gil, Mario, "Differences in Female Reproductive Cycles dependent on age and the effects on short term memory in the Syrian Hamster (*Mesocricetus auratus*)" (2024). *Research Symposium*. 68.
<https://scholarworks.utrgv.edu/somrs/2023/posters/68>

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Title: Differences in female reproductive cycles dependent on age and the effects on short term memory in the Syrian hamster (*Mesocricetus auratus*)

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The female reproductive system plays an important role in cognitive function, and the status of it affects memory and many other health issues, including mental. For this reason, it is important to continue studying its effects by using as a model, the female Syrian hamster. Like the human female menstrual cycle, the female hamster has shown inconsistencies in their cycles and changes in it as they age. The female hamsters' estrus cycle consists of a 4-day cycle. Dr. Orsini's protocol focusing on vaginal secretion, published in 1961, describes day 1 discharge of the cycle as translucent (TS), day 2 as proestrus (PO), day 3 as a waxy plug (WP), and day 4 as negative (NEG). Using Dr. Orsini's (1961) protocol and findings, we cycled three different aged cohorts, at different time points, for one year, to test the hypothesis that there are differences in the patterns of the estrous cycle and the effect of age. Over a 29-day period the older hamsters were in TS on average 3.2 days (standard error = 0.337); in PO 4.55 days (SE= 0.344); in WP 2.65 days (SE= 0.365); and in NEG 14.1 days (SE= 0.566). Over a 29-day period the middle-aged hamsters were in TS on average 3.7 days (SE= 0.528); in PO 4.19 days (SE= .0.473); in WP 3.57 days (SE= 0.415); and in NEG 13.5 days (SE= 0.695). Over a 29-day period the youngest aged hamsters were in TS on average 3.2 days (SE= 0.432); in PO 5.4 days (SE= 0.343); in WP 3.15 days (SE= 0.378); and in NEG 13.25 days (SE=0.721). Results support our hypothesis that there are differences in the pattern of the female cycle dependent on age. Next, we will conduct an experiment with a 4-stage protocol to investigate short term memory, and if there is an effect on it dependent on the female hamster's day of the cycle and the age. We hypothesize that the younger female hamsters will have better memory of the exposed odor than the older and middle-aged hamsters. We will test our hypothesis that the day of the estrus cycle is a factor in short term memory by using a repeated measures approach. We also plan to determine how each stage of their cycle affects them during experiments versus male hamsters. Female hamsters will be tested in the same protocol at different days of the cycle and data will be collected in AnyMaze. Data collected will be analyzed using SPSS and results will be presented at the symposium.