Title: Characterization of the female reproductive cycle in the Syrian hamster (Mesocricetus auratus)

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Gender and biological sex are important variables in biomedical research, and a female's reproductive status is an important factor that plays a role in and impacts health outcomes. Understanding how the female reproductive cycle affects behavior may help in the development of treatments that can be implemented in a clinical setting. Following Dr. Orsini's protocol, published in 1961, to identify and document the different stages of the female hamsters' 4-day estrous cycle, we characterized the female hamsters' estrus cycle by inspecting vaginal discharge phenomena. Orsini (1961) named day 1 discharge of the cycle as translucent (TS), day 2 as postestrus (PO), day 3 as a waxy plug (WP), and day 4 as negative (NEG). We cycled 20 female hamsters from our colony to replicate Orsini's findings and we also tested the hypothesis that there are individual differences in the pattern of the estrous cycle. We found that over a 29-day period, the 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). These data support our hypothesis that there are individual differences in the pattern of the female cycle. Next, we conducted a 10-minute open-field experiment to investigate sex differences in anxiety-like and exploratory behaviors. We found that female hamsters traveled an average 41.5 m, which was significantly higher vs males that traveled 33.6m ($p<0.05$), whereas males spent significantly more time immobile (mean = 157.7) compared to females (mean= 103.6) ($p<0.05$). We also plan to determine how each stage of their cycle affects them during experiments versus male hamsters. Our goal is to develop the female hamster as a model to study how reproductive status impacts behavior, cognitive function, and health outcomes.