\# 135 Lindsay Kenney Advisor(s): Dr. Sheryl Smith Ph.D.

Chronic, predictable stress in adolescence increases resilience in female mice that is maintained into adulthood, while unpredictable and social stress do not

Most studies investigating adolescent stress focus on its negative effects, while few explore its benefits during this critical period. Rodent studies mostly utilize males, despite evidence that females have a higher risk of developing mood disorders. The goal of this study was to explore the effect of three chronic stressors (predictable stress, unpredictable stress, and social isolation) administered throughout puberty to female mice on the development of, or resilience to, a depressive phenotype. Additionally, the effects of each pubertal stressor were examined in adulthood, to assess the duration of the effects. Each stressor was administered over 2 weeks, beginning at the onset of puberty (~P35, vaginal opening). Briefly, predictable stress involves physical restraint for 2 h/day. Unpredictable stress involves different stressors (such as tilted cage, predator scent, etc.) for different durations and at different times each day. Finally, socially isolated mice are kept in their own cages. Adult female mice (P75) were stressed under the same conditions, and control mice of both ages remained in their cages in a separate room over the 2 week period. Mice were tested 2 d later with the forced swim test (FST) to assess time immobile, which reflects a coping strategy. When pubertal female mice underwent predictable stress, they were less immobile in the FST compared to controls (R: 37% ± 0.04, C: 56% ± 0.04, $t(26)= 3.6$, $p= 0.001$), suggesting development of resilience. This effect was not observed in adult mice. Importantly, the resilience to predictable stress in the pubertal mice was maintained into adulthood (R: 43% ± 0.03 C: 50% ± 0.03, $t(49)=1.79$, $p=0.04$). When pubertal mice underwent unpredictable stress or social isolation, they did not develop resilience, as the time immobile was unchanged. Altogether, results indicate that only chronic, predictable stress during puberty prevents a depressive phenotype in female mice, which is maintained in adulthood.